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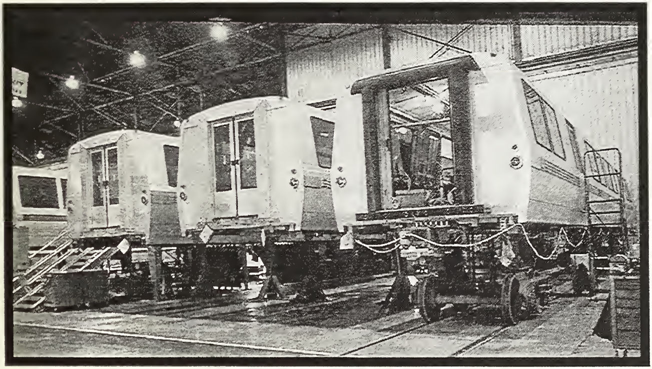
BART

San Francisco Bay Area
Rapid Transit District

FISCAL YEAR 2000
CAPITAL IMPROVEMENT PROGRAM

July 1999 through June 2010
Fiscal Years 2000 through 2010



DRAFT – June 10, 1999

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

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FISCAL YEAR 2000
CAPITAL IMPROVEMENT PROGRAM

Fiscal Years 2000 through 2010

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The contents of this report reflect the views of BART, which is responsible for the facts, and accuracy of the data presented herein. The contents do not necessarily reflect the original views or policy of the USDOT. This report does not constitute a standard, specification or regulation, and does not preclude future labor contract negotiations or future BART Board deliberations regarding fares.

All projects discussed are subject to state and federal environmental review as required by law. Specific projects and project funding are subject to approval by the BART Board of Directors. Projects that do not yet satisfy these requirements are proposed projects. This report was researched and prepared by:

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San Francisco Bay Area Rapid Transit District

June 10, 1999

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Chapter One: Introduction

OVERVIEW OF PROGRAM

OVERVIEW OF THE CAPITAL IMPROVEMENT PROGRAM

The Framework: The Strategic Plan

This year, the Bay Area Rapid Transit District (BART or the District) committed itself to a new framework for decision-making at the District. The Strategic Plan, adopted by the Board of Directors in January 1999, will provide the context for decisions regarding the District's operating and capital priorities and investments. The Strategic Plan is composed of seven areas of concern, some of which build on the fundamental principles that have always guided BART's decision-making, such as commitment to customer service and to BART employees, dedication to fiscal prudence and optimization of transit travel demand. Other areas of concern reconfirm objectives that have surfaced in recent years, such as on-going renovation and renewal of the BART system. Station area development and other community-oriented activities have also been elevated in their importance in recent years. *Chapter Two: The Framework — The Strategic Plan* details the Strategic Plan framework as it applies to BART's *Capital Improvement Program* (CIP).

The Content: Project Descriptions, Status and Highlights

In order to fulfill the vision embodied by the Strategic Plan, BART must engage in equipment and facilities renovation and replacement, as well as prudent expansion of the system. *Chapter Three: The Content — Project Descriptions, Status and Highlights* outlines those projects BART has planned, programmed, commenced or completed within the Fiscal Years 2000 – 2010 time span of the *Capital Improvement Program (CIP).*

There are five major programs into which all of the approximately 275 separately listed projects are organized, and an additional category of other financial obligations. Three of the Program Areas have sub-program categories as well.

I. **System Renovation**
    A. Rolling Stock
    B. Mainline
    C. Stations
    D. Controls & Communications
    E. Facilities
    F. Work Equipment

II. **Extensions**
    A. Phase 1 Extensions
    B. Phase 2 & 3 Extensions

III. **Seismic Retrofit**

IV. **Service Improvements**
    A. Current Planned Expansion
    B. Additional Capacity Enhancement
    C. Station Area Development

V. **Research, Development & Demonstration**

A large segment of *Chapter Three* focuses on BART's Systemwide Renovation Program, the majority of which BART committed to as a comprehensive plan in 1995. The purpose of the Systemwide Renovation Program is to maintain BART's performance standards and to sustain and improve customer service and customer satisfaction. Entering its third decade of service in the early 1990s, the BART system had reached a critical point in its evolution. This system that had been a shiny, new high technology marvel at its inception had aged. The passage of time and the carriage of over a billion passengers had taken a toll on BART rail cars and stations, affecting their reliability, comfort and appearance. Many electronic and mechanical systems were approaching the end of their original design lives. It was time to begin reinvesting in the physical plant to ensure continuing service quality and reliability.

In addition to the renovation and renewal of its existing physical infrastructure, BART has also been expanding the system. Included in *Chapter Three* is a description of BART's Extensions Program. During the 1990's, five new stations and 23.5 miles of track were added to the original BART system. The Colma Extension extended BART from Daly City further into San Mateo County, facilitating travel on BART south of San Francisco. With the Pittsburg/Bay Point Extension, BART expanded into eastern Contra Costa County. The Dublin/Pleasanton Extension brought BART to the Tri-Valley area of Alameda County. In 1998, BART commenced construction of a four station, 8.7 mile region-linking extension to San Francisco International Airport.

Seismic safety is a top BART priority. This year, BART redefined its comprehensive Seismic Retrofit Program, which will raise the system to current design standards that would facilitate the immediate resumption of service after a major earthquake. *Chapter Three* discusses the contents and breadth of this program and outlines its segments.

The Bay Area has experienced rapid and substantial population and job growth over the past several years. Sizable regional growth has fueled consistent BART patronage growth. Accommodating this increased demand has required BART to dramatically increase service levels. As a result, BART must plan and implement prudent upgrades of its physical infrastructure to meet the heightened demands. Moreover, BART must continue to respond to the needs of its constituent communities, investing wisely in station area development, other passenger environment improvements and maintenance facility expansion. *Chapter Three* details the Service Improvements Program, which includes these improvements to the system.

In addition to renovation, improvement and expansion of the BART system, BART actively pursues a Research, Development & Demonstration Program, which investigates new technologies that improve BART's efficiency and operations by keeping BART on the cutting edge of technology. This program is further described in *Chapter Three*.

The Context: Funding Strategy

This CIP lists all of the projects that the District would implement over a ten year period, if adequate funding were available. The entire program totals almost $7.941 billion. A program of this size is currently beyond the level of funding that can reasonably be assumed to become available through existing sources over the next ten years. Therefore, in accordance with the approach taken by the Metropolitan Transportation Commission (MTC) in its development of the 20-year Regional Transportation Plan, BART's CIP is divided into two "tracks."

Track One is "financially constrained" per MTC's direction, and comprises those projects which are essential to continued safe and reliable operation of the system and for which potential funding sources can reasonably be identified. Track Two includes projects for which the projected near-term levels of identifiable funding sources are currently inadequate. Implementation of Track Two projects would require larger allocations to existing federal, state and local programs in the future and/or the creation of new funding sources.

Such a large capital improvement program merits a comprehensive funding strategy. BART pursues a diverse set of capital revenues and funding options. These include federal and state grants, sales tax and property tax revenues and passenger fares, among other revenues. See Chapter Four: The Context — Funding Strategy for more information on funding availability for various programs.

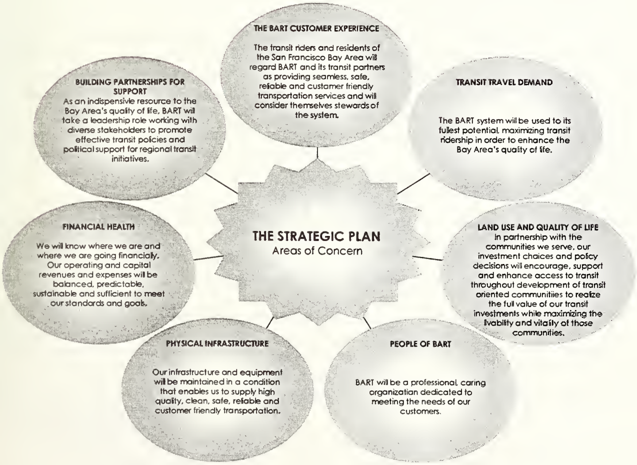
Chapter Two: The Framework

THE STRATEGIC PLAN

INTRODUCTION

In January 1999, BART adopted a Strategic Plan that will serve as the framework for the District as it plans for the future. The Strategic Plan is the result of several years of data-gathering, analysis and goal development by BART Directors, BART staff and the leaders and staff of BART partners in transit and local governments throughout the San Francisco Bay Area region. Although BART's Board of Directors has formally adopted the Strategic Plan and the visions and goals contained therein, a comprehensive implementation plan is still under development. As a result, the FY 2000 CIP will "connect the dots" between BART's historical governing principles, the projects commenced under those concepts and the new visions outlined in the Strategic Plan.

The Strategic Plan is organized around seven areas of concern: the BART Customer Experience, Building Partnerships for Support, Transit Travel Demand, Land Use and Quality of Life, People of BART, Physical Infrastructure and Financial Health. It is the defining visions conceived within these spheres that circumscribe BART's goals, which, in turn, will inform BART's financial priorities and investment decisions. Therefore, the *Capital Improvement Program*, BART's ten-year capital planning document, cannot be developed without close attention to the District-wide goals identified in each area of concern within the Strategic Plan. This chapter will briefly review each area of concern as defined in the Strategic Plan and will identify some of the projects that meet its goals.



THE BART CUSTOMER EXPERIENCE
The transit riders and residents of the San Francisco Bay Area will regard BART and its transit partners as providing seamless, safe, reliable and customer friendly transportation services and will consider themselves stewards of the system.

BUILDING PARTNERSHIPS FOR SUPPORT
As an indispensible resource to the Bay Area's quality of life, BART will take a leadership role working with diverse stakeholders to promote effective transit policies and political support for regional transit initiatives.

TRANSIT TRAVEL DEMAND
The BART system will be used to its fullest potential, maximizing transit ridership in order to enhance the Bay Area's quality of life.

FINANCIAL HEALTH
We will know where we are and where we are going financially. Our operating and capital revenues and expenses will be balanced, predictable, sustainable and sufficient to meet our standards and goals.

LAND USE AND QUALITY OF LIFE
In partnership with the communities we serve, our investment choices and policy decisions will encourage, support and enhance access to transit throughout development of transit oriented communitiies to realize the full value of our transit investments while maximizing the livability and vitality of those communities.

PHYSICAL INFRASTRUCTURE
Our infrastructure and equipment will be maintained in a condition that enables us to supply high quality, clean, safe, reliable and customer friendly transportation.

PEOPLE OF BART
BART will be a professional, caring organization dedicated to meeting the needs of our customers.

THE BART CUSTOMER EXPERIENCE

BART's overarching customer service vision is that, *"the transit riders and residents of the San Francisco Bay Area regard BART and its transit partners as providing seamless, safe, reliable and customer friendly transportation services, and will consider themselves stewards of the system."* BART has many projects underway and planned to improve the quality of the customer experience, thereby fostering customer stewardship.

In order to maintain BART's performance standards, and thereby sustain customer satisfaction, the District must maintain the safety, reliability and cleanliness of the physical infrastructure with which its riders come into contact. The most critical piece of infrastructure is BART's trains. BART's largest renovation project, the A & B Car Renovation project, is a full-scale overhaul of the original fleet of twenty-five year old train cars. The renovated cars will improve the reliability of the system through reduced unscheduled maintenance and repair. In addition, new carpeting, seats and handrails will replace the existing equipment in the cars, improving the comfort, cleanliness and appeal of the car interiors.

BART will continually improve customer satisfaction by maintaining performance standards and providing quality customer service.

In addition to the renovation of BART's original A & B cars, BART is also implementing a mid-life overhaul of its ten-year old C-1 cars. While not a full renovation, this overhaul will replace equipment pertaining to passenger comfort, such as the air conditioning system, carpets and seats, as well as equipment that affects reliability, including car doors and propulsion and brake systems.

Another key piece of infrastructure that directly impacts customer satisfaction is BART's fare equipment. BART's Automatic Fare Collection Equipment Modernization / Translink Implementation (AFC / Translink) project will renovate and/or replace every faregate, ticket vendor and addfare machine. It will also upgrade BART's data collection system, which enables the District to monitor ridership and other data essential for service planning. The successful completion of this project will improve the reliability of the fare equipment, facilitating the flow of customers through the stations. In addition, the upgraded data acquisition system will enable BART to fine-tune service planning to accommodate changing ridership patterns in the region.

A critical piece of the District's delivery of good service to BART customers is its coordination with other transit providers in the region. For many years, the District has worked closely with connecting bus services to improve the intermodality of BART stations by adding bus handling capacity, improving traffic flows and providing more rider amenities. BART's intermodal station projects currently underway and planned include the West Oakland, Fruitvale, Coliseum, South Hayward, and Union City stations. Intermodal improvements have already been completed at the Richmond, El Cerrito Del Norte, El Cerrito Plaza, Fremont, Hayward, Concord and Walnut Creek stations.

BART will maximize regional transit access, convenience and ease of use through effective coordination among transit providers.

The AFC / Translink project will provide passengers transferring between BART and other transit operators with a single, "universal" fare mechanism. This will greatly improve the convenience and efficiency of intermodal transfers.

BUILDING PARTNERSHIPS FOR SUPPORT

As a multi-county transit provider, BART understands that it must work within its constituent communities in order to provide optimal service in the region. The Strategic Plan identifies "Building Partnerships for Support" as a significant area of concern. BART's vision in this area is the following: *"As an indispensable resource to the Bay Area's quality of life, BART will take a leadership role working with diverse stakeholders to promote effective transit policies and political support for regional transit initiatives."*

Public input is a central tenet of BART. Board and Board committee meetings are open for public participation and comment. Moreover, Board and staff members frequently participate in community meetings and hold community forums to solicit public feedback.

BART will encourage and consider public input as integral to sound, balanced policy development and decision-making, and make deliberate, disciplined decisions in the best interest of the people it serves.

With 39 stations located in 20 cities, BART connects four counties by rail and facilitates links with more than a dozen other transit operators in the region. Numerous public opinion polls and ballot measures clearly indicate the high regard in which BART is viewed by its constituent communities. It is one of the District's goals to continue to provide significant and unique value to the Bay Area. This can best be accomplished by continuing to deliver a capital program focused on system reliability, renovation and prudent expansion.

Residents of the Bay Area will value and take pride in BART as an integral part of their communities.

BART has always worked closely with the Federal Transit Administration (FTA), the California Transportation Commission (CTC), the Metropolitan Transportation Commission (MTC), congestion management agencies (CMAs), cities and counties, other transit operators in the region and community organizations to identify and pursue regional transit and local community needs as they involve BART. BART Board members, themselves, represent the diverse transit needs of their geographical electoral districts in Alameda, Contra Costa and San Francisco counties.

BART will be viewed by stakeholders as a credible, trustworthy steward of the system we manage and operate, focused on improving our value to the riders and the communities it serves.

In recent years, partnership building has become increasingly important to BART. The development of the Strategic Plan itself involved members of funding agencies, other transit agencies, local government, local non-governmental organizations and the community. Each participant contributed significantly to the strategic planning process and to the areas of concern and visions embodied by the Strategic Plan.

Key elected officials, opinion leaders and decision-makers will understand and actively support transit needs and initiatives.

TRANSIT TRAVEL DEMAND

Like all other transit agencies, one of BART's most critical efforts is the attraction and retention of customers. It is in the best interest of the entire Bay Area, transit riders and drivers alike, to maximize transit ridership. Not only does it reduce automobile traffic damage, but it also reduces congestion on streets and highways. The Strategic Plan asserts as one of its visions that *"the BART system will be used to its fullest potential, maximizing transit ridership in order to enhance the Bay Area's quality of life."*

BART's Data Acquisition System (DAS) is critical for monitoring ridership and compiling data necessary for efficient service planning. The AFC / Translink Project will overhaul the DAS system, updating it with current technology for greater accuracy and improved features.

BART will work to understand and be prepared to respond to changing transit demand patterns, and proactively to influence travel demand trends in the region that support transit ridership.

Another way to maximize transit ridership is to optimize existing capacity. Towards that end, BART is working with local communities and other entities to improve off-peak (reverse commute and non-commute) demand for transit. Currently, BART and its partners are planning and implementing several station area development projects intended to improve the environment at BART stations and to create destinations during off-peak hours. These projects include the Fruitvale Station Development Project, which will redevelop the station to include a pedestrian plaza, a childcare facility, and a parking structure. The Mission Street Corridor Revitalization Project will improve the safety, aesthetics and public amenity of the 16th Street/Mission Station Plaza by implementing a community-developed plan. The Community Design Plan will install new and enlarged bus shelters for more comfortable transfers between transit options and implement such enhancements as lighting, paving, landscaping, benches and the removal of barriers to improve pedestrian circulation.

BART will optimize the use of existing capacity.

BART's Advanced Automatic Train Control System (AATC), the result of significant research and development by the District and private sector partners, will enable BART to operate trains at closer headways, significantly increasing passenger capacity without additional vehicles.

In addition to improving and extending the BART system to optimize transit travel demand, the District is also planning and implementing projects that aid travel to and from BART stations. The many planned and completed transit center projects improve traffic circulation and enrich the passenger experience by upgrading bus waiting and loading areas, providing weather protection and other amenities. BART also has several projects designed to improve bicycle and pedestrian access, including electronic signage, improved sidewalks and accessible pathways, bicycle paths and bicycle storage.

BART will encourage and facilitate improved access to and from our stations by all modes.

BART will work to close the gaps in regional rail services between major populations and employment centers and/or corridors.

In addition to pedestrian and bicycle access, BART has developed "CarLink," a new car sharing/station car program that builds on the concept of "car sharing." Station cars are automobiles that are each used by several BART riders per day to provide access and egress to and from stations. "CarLink" was launched in February 1999 at BART's Dublin/Pleasanton station using twelve compressed natural gas cars. Soon BART will have station car services provided by rental car companies, using gasoline cars. One BART customer will drive the car from home to the station. Another BART customer will drive the car from the station to the work site. At the work site the car will be used as a corporate pool car. This will maximize the productivity of BART's constrained supply of parking at stations. With revenue coming in from each of the several daily users, the station car market could become a major new opportunity for the rental car industry, as well as a mode for enhanced access to transit.

One of BART's missions is to provide service, in conjunction with all regional transit operators, to as much of the region as is technically and financially feasible. To further maximize transit travel demand, BART has extended its system by five new stations and 23.5 miles of additional tracks within the past ten years, so that it is available to increasing numbers of riders.

BART's extension program is intended to open up new markets, as well as to provide critical linkages where there are current gaps in the regional transit system. The BART-SFO Extension will enable residents and visitors throughout the region to take public transit to San Francisco International Airport for both employment and air travel. This will provide a high-speed, high-capacity rail transit connection from one of the world's busiest and fastest-growing airports to San Francisco and all of the urban centers of the East Bay. The planned Oakland Airport Connector project would likewise provide a fast, high-capacity link between that airport and the BART mainline. The planned Warm Springs/Santa Clara Phase I Extension would bring BART's Fremont line further south to begin closing the gap in high-speed transit between BART and the rapidly growing South Bay / San Jose / Santa Clara / Silicon Valley area.

LAND USE AND QUALITY OF LIFE

BART both impacts and is affected by the communities in which its stations are situated. As an influential component of the community, one of BART's areas of concern is land use and quality of life. The vision that defines this concern is *"in partnership with the communities it serves, BART's properties will be used in ways that first maximize transit ridership and then balance transit oriented development goals with community desires."* BART seeks to be responsive to the needs of communities in the Bay Area by optimizing the use of its properties and by working intensively with local communities to keep the BART properties within them safe, useful and attractive.

BART is involved in several station area projects regarding transit-oriented development, livability and vitality improvements and pedestrian, bicycle and disabled access. At the Fruitvale Station, BART worked closely with the Fruitvale Development Council and the Unity Council to develop a station area plan, which will redevelop the station to include a pedestrian plaza, improved physical linkages to the surrounding community, a childcare facility and a parking structure. This plan is now being jointly implemented.

> In partnership with the communities it serves, BART's properties will be used in ways that first maximize transit ridership and then balance transit oriented development goals with community desires.

The Mission Street Corridor Revitalization Project involved many community organizations, including the San Francisco County Transportation Authority (SFCTA), Mission Housing and Urban Ecology. BART and the SFCTA have recently received a grant to implement the first phase of the Community Design Plan, including reconstruction of the southwest BART plaza. The Community Design Plan is a community-developed blueprint for creating a safer and more vibrant public space at the 16th Street Mission Station. BART is also working with the Mission Economic Development Association on a similar community plan for the 24th Street Mission BART Station.

> In partnership with communities, we will promote transit ridership and enhance quality of life by encouraging and supporting transit oriented development within walking distance of BART stations.

In cooperation with the City of Concord, downtown streetscape upgrades and pedestrian improvements will be implemented to improve the linkage to BART. Other station area development concepts are currently in the planning stage, and are seeking funding for projects at 24th Street/Mission Station and Balboa Park Station in San Francisco, and in Oakland, Berkeley, Richmond, and San Leandro.

PEOPLE OF BART

BART was conceived in 1968 as a technical marvel, a transit system on the cutting edge of high technology. However, BART could not operate without the dedication and competence of its more than 3,000 employees. Hence, one of BART's most critical visions is that *"BART will be a professional, caring organization dedicated to meeting the needs of our customers."* The District's "front-line" employees provide a vital service to BART customers, providing information and assistance in the stations and operating the trains in a safe, comfortable manner. Others maintain the facilities and equipment so that the system operates safely, reliably and efficiently. Other BART employees look to the future of BART, implementing renovation and replacement and designing the prudent expansion of the BART system. They monitor BART's fiscal status, ensuring compliance with financial rules and regulations, forecast BART's financial performance and funding requirements and pursue funding.

BART's commitment to its employees is longstanding. BART has implemented several projects designed to improve the safety and comfort of the environments in which employees work. For example, the District recently enlarged and upgraded its transportation buildings, improving employee amenities. In addition, the renovation of the Richmond maintenance yard is designed to improve the safety of BART employees. Another BART project will improve the comfort of employee facilities throughout the system.

In order to support employee morale and productivity, annual allocations are made for the replacement and upgrading of capital equipment and tools, for system maintenance, staff training and development, and administrative functions.

BART will have an organizational culture that respects, values and empowers employees and puts customers first.

BART will attract, train, retain and provide job enrichment and career growth to a dedicated and competent workforce.

BART will create a welcoming and supportive environment for all employees.

PHYSICAL INFRASTRUCTURE

Rail systems are highly capital intensive. The BART system is composed of trains, track, stations, maintenance facilities and other physical infrastructure. Each piece of infrastructure and equipment has a discrete useful life. Proper renovation and replacement are necessary to maintain the level of safety, reliability and cleanliness that are BART standards. The Strategic Plan denotes that one of BART's visions is that *"our infrastructure and equipment will be maintained in a condition that enables us to supply high-quality, clean, safe, reliable and customer friendly transportation."*

We will make annual investments in maintenance and repair of our physical infrastructure sufficient to support safety, cleanliness, reliability, train performance and customer friendliness.

Much of the original BART equipment is reaching the end of its design life. Therefore, BART has committed to a comprehensive renovation and replacement program. The first increment of this plan was embarked upon in 1995 when BART commenced its first phase Systemwide Renovation Program. This program now totals $1.571 billion, and includes the complete overhaul of the District's 439 original cars, and the replacement or overhaul of all major systems such as power, train control, communications and maintenance facilities. Station renovation is currently focused on overhaul or replacement of escalators, elevators and automatic fare collection equipment.

We will meet the demands of our customers and we will assure the long-term viability of BART by continuously re-investing in our aging infrastructure so as to maintain its functional value.

As BART carries ever more passengers ever longer distances, the trains need increased maintenance and repair. Recognizing this heightened need, BART has initiated a comprehensive shop improvements program, which will enhance the capacity of BART's Concord, Hayward, Richmond, and Daly City maintenance facilities.

Renovation is a continuous process in a mature transit agency, not a one-time expense. In order to continue providing the highest possible levels of service to an ever-growing customer base, BART must continually plan for further reinvestment. Certain capital investments must be made regularly to maintain the integrity of the BART system. As a result, BART has developed on-going rail replacement, train control and traction power programs which annually fund renovation and replacement of BART's track, train control system and the electrical power system that propels the trains.

Insure that infrastructure and maintenance capacity supports the planned level of service. At the same time, provide the infrastructure flexibility to support the planned level of service value.

This *Capital Improvement Program* also includes a Track Two renovation program, currently unfunded, which will be necessary to implement over time to meet ever-increasing demands for more service.

FINANCIAL HEALTH

BART has set the standard for fiscal prudence and financial health. It continues to be one of BART's central visions that *"we will know where we are and where we are going financially. Our operating and capital revenues and expenses will be balanced, predictable, sustainable, and sufficient to meet standards and goals."* BART performs extensive and comprehensive financial analyses and projections annually in which the District reviews its historical performance and uses its past performance and knowledge and understanding of current financial trends to forecast future performance.

The District has sought, and continues to seek, to keep BART rider fees reasonable and competitive with other transportation options within the Bay Area, the state and the nation. BART provides value by focusing on the safety, reliability and cleanliness of the BART system and by working with local communities and other stakeholders to address the needs of riders and the region.

We will remain a transit service that is competitive in terms of value (i.e., quality for price) for the people we serve.

It has long been one of the District's objectives to share costs among those who benefit from the BART system. BART is an asset not only to its riders, but to the region, the state and the nation as well. BART provides a viable transportation option to many in the Bay Area, and, in so doing, reduces congestion on streets and highways and contributes to the preservation of the environment. Thus, historically, BART capital revenues have come from multiple sources, including, but not limited to, federal and state grants, local sales tax revenues, local property tax revenues and passenger revenues. By relying upon a diversity of revenue sources, and through prudent management of existing resources, BART has been able maintain financial stability.

We will maintain and improve the stability of our financial base.

BART works closely with the Metropolitan Transportation Commission (MTC) and other regional transit partners to advocate for grant funding. Together, BART and its partners develop regional funding plans, designed to meet the most critical transit needs of the region. These partnerships enable BART to more effectively pursue grants with the Federal Transit Administration and the California Transportation Commission.

We will work with our regional transit partners to advocate for funding needed first to sustain existing transit services and infrastructure reinvestment, and then to pursue prudent expansion.

BART's judicious financial planning enables the District to predict with a degree of certainty its financial performance and capacity from year to year. BART relies upon this financial stability and capacity when it borrows against future revenues to deliver the necessary capital program in a timely manner. Fiscal prudence has enabled BART to enjoy extremely high credit ratings, borrow

Our financial choices will be guided by prudent fiscal policies and by reliable, useful revenue and expense forecasts and plans.

at relatively low interest rates, and thus minimize interest debt.

Much of BART's physical infrastructure has a useful life of twenty years or greater. However, BART's *Capital Improvement Program* projects only ten years of the District's capital needs. As BART has become a mature system with regular and forseeable renovation needs, it has become clear that the District must engage in longer term capital planning in order to ensure that critical renovation needs are met. Therefore, BART is embarking upon the development of a Thirty Year Capital Plan. This plan, when completed, will focus on BART's long range capital objectives and financial needs. The plan will be used to estimate BART's capital requirements over thirty years and will feed into the MTC's regional, long-term planning document, the Blueprint for the 21st Century.

Chapter Three: The Content

PROJECT DESCRIPTIONS, STATUS AND HIGHLIGHTS

INTRODUCTION

This chapter provides detailed descriptions of many of BART's 279 capital projects by capital program. A significant portion of the capital program is centered on the renovation and replacement of the District's existing physical infrastructure. The District faces increasing pressure to preserve the BART system as its infrastructure ages. The A and B car renovation, which completely rehabilitates BART's 439 original transit vehicles, is already underway. This project will greatly improve the reliability, safety and comfort of 80% of the District's revenue rail vehicle fleet.

As part of the District's commitment to continuous renovation of critical components of the system, BART has three ongoing projects – rail replacement, traction power renovation and train control renovation – which are funded with a combination of federal grants and BART funds. Renovation in these areas is critical to maintain BART's operating performance and safety standards. The District also has several renovation projects underway in its stations, including the rehabilitation and replacement of elevators and escalators systemwide, the renovation and replacement of fare collection equipment systemwide and accessibility improvements throughout the system. These renovation projects will facilitate BART passenger entrances to and exits from the system by improving escalator, elevator and faregate reliability and ameliorating pedestrian, bicycle and disabled access to BART stations. More detailed descriptions of the District's renovation, rehabilitation and replacement projects follow in the section of this chapter entitled *Systemwide Renovation Program*.

In addition to the upkeep of the system, BART's increasing ridership necessitates investments in upgrades, improvements and prudent expansion of existing facilities in order to maintain consistent and reliable service, to improve passenger comfort and to retain high safety standards. The District's commitment to on-time performance and customer service constantly motivates BART to pursue improvements, modifications and augmentations to the existing system. As BART rail cars traverse more miles and carry more passengers, they require more frequent maintenance and repair. As a result, several projects are in development to augment the capacity of the District's maintenance facilities. One way BART continues to add value to its customers is by working with other transit operators in the Bay Area to facilitate transfers between transit modes. Towards this end, the District has completed several intermodal projects at BART stations, and is implementing several more. The section of this chapter entitled *Service Improvements Program* contains more detailed descriptions of the District's system improvement and upgrade projects.

BART's earthquake program, further described in the section of this chapter entitled *Seismic Retrofit Program*, is designed not only to maintain the structural integrity of the system during and following a major earthquake, but also to enable the District to continue to operate after such an event. The core of program is the "Lifeline" Program, which is planned to preserve transbay service. The Caltrans Local Seismic Retrofit Program, currently under joint study and development with Caltrans, will strengthen BART's aerial structures located over highways, streets and roads up to BART's serviceability standards. Other segments of the program will retrofit the remainder of the system and BART facilities.

While BART is first committed to preserving the existing system, the District is also dedicated to providing additional needed service to the Bay Area. Over the past several years, BART has extended the system to Dublin/Pleasanton, Pittsburg/Bay Point and Colma. Currently, a BART extension to the San Francisco International Airport (SFIA) is underway. This extension will enable residents on both sides of the San Francisco Bay to travel via public transit to SFIA. Moreover, the extension will include a direct connection between BART and Caltrain. This will enable an East Bay rider from any point on the BART line to travel across the Bay and down the Peninsula to San Jose with only a cross-platform transfer at the Millbrae intermodal station. Further description of the completed extensions, the underway BART-SFO Extension and other potential future extensions can be found in the section of this chapter entitled *Extensions Program*.

The District, as a technology-reliant agency, must have a strong research and development (R&D) effort in order to optimize the performance and service of the BART system. BART's R&D group has designed advanced and highly useful technology that cost-efficiently improves the BART system. One prominent example of technology developed by BART's R&D group is the Advanced Automatic Train Control (AATC) system. This system, now being implemented, will enable trains to operate at closer headways, optimizing the capacity of the BART system. While AATC has been incorporated in the District's train control renovation program, other leading edge technological investigations are currently underway. The section of this chapter entitled *Research, Development and Demonstration* further outlines this program.

SYSTEMWIDE RENOVATION PROGRAM

Making Progress in Renovation

BART is meeting the challenge of renovating and renewing its existing physical infrastructure. By 1995, after more than 20 years of service with the original equipment, BART had developed an initial phase program of systemwide renovation, forecast to take up to ten years to complete, at an estimated cost of $1.1 billion. Also by 1995, the District had developed a realistic financial plan for the program anchored by substantial grant funding and supplemental, necessary fare increases to generate a major share of the required funding internally.

The good news for BART customers is that in 1999, only four years into the ten-year program outlined in 1995, 53 of 186 renovation projects have already been successfully completed and 51 more of those projects are underway. One of the first projects completed was the replacement of seat covers, upholstery, and carpet in 100 of BART's oldest rail cars. Sixteen stations have undergone a major program of intensive cleaning, painting, repairs to equipment and structures, and refurbished landscaping. Many other recent improvements are also readily noticeable to BART riders, such as the replacement of twenty-three escalators in downtown San Francisco stations, the addition of thirty faregates to improve passenger flow, improved accessibility for disabled customers, significant station safety and security improvements, installation of BART ticket machines that accept credit and debit cards, the replacement of the old bus transfer ticket dispensers in the East Bay stations, and the replacement of old bicycle lockers. These projects were designed to improve the quality of transit for BART passengers. Less visible projects include several intended to improve the system's long-term operational reliability.

Remaining Challenges in Renovation

BART has made significant progress in the renovation program, yet challenges remain. On the program delivery side, the challenge is to optimize the use of the funds that will come in over the next several years in ways that maximize the benefit to BART riders. From the perspective of BART riders, Fiscal Year 2000 will be marked by several highly visible milestones intended to improve the ridership experience. By the end of Fiscal Year 2000, up to 150 of BART's oldest railcars will have been completely renovated and returned to service. This renovation includes interior furnishings, heating and cooling systems, electrical, mechanical and propulsion systems. The complete overhaul of all BART station elevators is forecast to be completed by the end of Fiscal Year 2000. About one-third of the station escalators should be overhauled as part of a program to complete them all by Fiscal Year 2001. Four stations will undergo thorough facilities refurbishment in Fiscal Year 2000. Major progress is projected for the Automatic Fare Collection Equipment Modernization / Translink Implementation Project, as well as reliability improvements in the train control and traction power systems.

Rolling Stock Renovation Program

The purpose of this program of projects is to replace and renovate those components and subsystems of BART's rolling stock that have deteriorated or are susceptible to malfunctions. Aging rolling stock has high associated maintenance costs and reliability problems and is a significant factor in service disruptions. Rolling stock renovation will prevent major disruption and delays in revenue service, as well as extend the useful life of BART's revenue vehicles. Four of the seven Track One projects in this program are completed, with two additional projects, including the A & B car renovation and the C-1 car midlife overhaul, underway.

Projects Completed

Replace Electrical Couplers on C-1 Cars

The old "pin-type" inter-car electrical couplers were a very high maintenance item. Conversion to "button-type" couplers between cars has reduced maintenance requirements and car out-of-service time.

Replace A- and B-car Door Components

In the past, malfunctions of the door systems on A- and B-cars were a major factor in service disruptions, and as such were addressed earlier than could have been accomplished through the current car renovation program. One problem was expansion of the foam comprising the door core, which then delaminated the door structures and caused the door to jam. Corroded door suspension rails also contributed to door failures.

Replace Batteries on A, B, and C-1 Cars

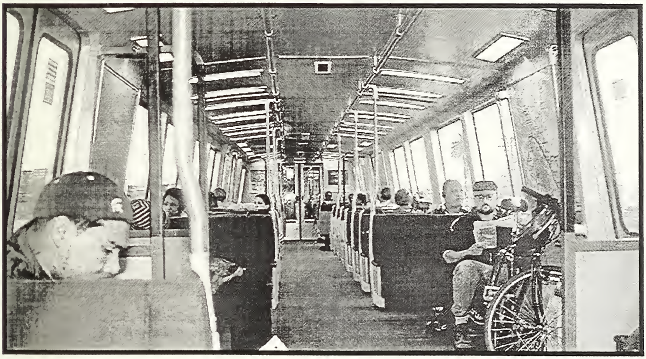
The transit vehicle fleet is equipped with batteries to supply power for lights and operating controls for a limited time when the auxiliary power supply equipment or motor alternator loses electricity or fails. Good batteries allow the train to continue to the end of the line after experiencing a motor alternator electricity loss or failure. For reliable service, train car batteries need to be replaced with new batteries every 10 to 13 years. This project has helped to ensure reliable back-up power by replacing 400 aging batteries on A, B, and C-1 cars. In addition, all new batteries have been placed on a time-controlled maintenance and replacement program. Batteries will be reconditioned after five years of service and replaced after ten years.

In addition to the above-described projects, the wheel upgrade program has been completed.

Projects Currently Underway

A- and B-Car Comprehensive Renovation

The renovation of the District's original fleet of A- and B-Cars is essential to enable BART to continue to provide for current and future service demand levels. The District has one of the oldest average fleet ages in the transit industry. Before commencement of the A- and B-Car Renovation Program, these 439 cars had never been comprehensively overhauled during their 25-year lives. This project incorporates all elements of complete reconstruction – it will replace worn out and obsolete components and return the vehicles to their original design specifications. Systems being replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting. The renovation is intended to add twenty years of service life to the cars, improve their reliability, and bring them into compliance with the requirements of the Americans With Disabilities Act (ADA). The cost of remanufacturing vehicles is estimated at approximately 50 percent of the cost of new cars. The following is a photograph of a renovated car in revenue service. Improved lighting, better handrails and more attractive, stain-resistant seat upholstery and carpets are some of the notable passenger comfort improvements.



Midlife Overhaul of C-1 Cars

The overhaul of C-1 vehicles at the mid-span of their design life will reduce future maintenance costs and greatly improve the reliability of the cars, encouraging additional BART ridership. This project will replace deteriorated floor panels and carpets, recondition car doors, upgrade the vehicle interiors, and overhaul and upgrade the air conditioning, propulsion and brake systems.

Track Two Projects

C-1 Car Comprehensive Renovation

The C-1 cars that went into service in the late 1980s will approach 20 years of operation by the end of this planning period. Ideally, these cars should begin a program of complete renovation, similar to that now underway and described above for the A- and B-cars, in the 2008-2009 timeframe.

Install Automatic Train Control Restoration Units

Failure of the on-board vehicle automatic train control (ATC) system, in addition to the wayside ATC, is one of the major causes of service disruption. This project is a retrofit of the existing systems, which will provide two valuable functions. First, the new units will dramatically speed recovery from such failures, thereby quickly returning to service temporarily disabled trains. Second, the new systems will capture and record critical information about failures, improving the efficiency of maintenance.

Security Camera Installation on Transit Vehicles

This project would purchase and install security surveillance cameras on the entire transit vehicle fleet.

Fleet Upgrades

Similar to the C-1 Car Midlife Overhaul project described above, the rest of the BART fleet will benefit from periodic renovation to systems and passenger comforts, in order to maintain BART's reliability and customer service standards.

Mainline Renovation Program

The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline that have deteriorated, or will deteriorate in the next ten years, due to age and use. Many components of the trackway and traction power systems are over 25 years old, and are failing with increased frequency. These systems must be reconditioned or replaced in order to maintain reliability and avoid service disruptions. Mainline renovation will prevent rail and traction power failures that would cause disruption and delays to revenue service. Of the 25 Track One projects in this program, nine are completed and seven are underway.

Projects Completed

Recoat Tunnel Liner Rings for Corrosion Protection

The steel rings that line BART tunnels must periodically undergo heavy maintenance, including removal of corrosion encrustation, sandblasting, and a reapplication of corrosion-resistant coating. A phase of this essential work was completed recently in order to avoid further corrosion and consequent structural deterioration and weakness.

Replace Dry with Wet Standpipes

This project replaced dry standpipes with wet (water-filled) standpipes for improved fire-fighting capability and response time to increase passenger safety.

Track Embankment Upgrade

This project permanently enhanced and upgraded approximately 4600 linear feet of track embankment between the Union City and Fremont Stations. The embankment had been damaged by erosion and soil slippage. Improvements included rip rap (large boulders) and geosynthetic reinforcement to stabilize the embankment and create positive drainage, which will prevent future damage from occurring.

Transbay Tube Cathodic Corrosion Protection

The cathodic protection of the Transbay Tube protects the outer steel liner of the tube from corrosion. This works by forcing current at various locations along the tube into sacrificial anodes that prevent most of the corrosion of the liner. The original anodes lasted only four years or so, but with the application of modern applied engineering techniques and materials, the useful lifespan of anodes has been increased to eight to ten years. Therefore, this cycle must be repeated every eight to ten years. One such cycle is currently approaching completion.

This project includes several activities associated with cathodic protection that ensure continual and optimal functioning of the system. The anodes and cables for cathodic protection are replaced and measurements taken to determine the amount of corrosion occurring. The location and sites of the anodes and the cables are shown on shipping charts; yet, quite often the cables from the anode to the tube are dragged and damaged by ships dropping anchor. Locating and replacing the Transbay Tube anodes and cables in up to 100 feet of water and 25 feet of mud requires experienced divers and special equipment. In addition, there is cathodic protection on the BART Vent Structure in San Francisco and on the San Francisco Ferry Building for which BART is responsible due to foundation modifications made necessary by the construction of the Transbay Tube.

Rehabilitate Subway Ventilation Line Fans

This project replaced all the old ventilation fan blades in tunnels and subways throughout the system. This work was required to upgrade the ventilation fans that are used for emergency passenger evacuation and for maintenance crews working in the subway sections. In the past, fan failures resulted from cracks that have developed over time in the blades, causing the blades to fail. To the right is a photograph of ventilation fan blades replacement.

Repaint Structural Girders and Bridges

The BART bridges and aerial structure girders recently completed their first complete repainting since their construction in the 1960s and early 1970s. This work was essential to avoid additional corrosion and subsequent structural deterioration and weakness.

Asbestos Abatement

The 1989 Loma Prieta earthquake damaged the asbestos insulation in train control electronics rooms at various locations around the District. Maintenance personnel were able to enter these rooms only when fully protected against potential asbestos exposure, making such maintenance much more difficult, time-consuming, and expensive. This project removed the asbestos-containing material from these areas.

Replace Sump Pumps in Subway Tunnels

The ability to pump water out of subway tunnels is critical to keeping the system safe and reliable. This project replaced 33 aging sump pumps with new submersible-type pumps at 16 different locations systemwide. Also, oil skimmers were installed at each sump because the effluent is pumped directly to municipal storm drainage systems.

In addition to the above-described projects, BART has also completed its Berkeley Hills Tunnel Fire Protection Modifications project.

Projects Currently Underway

Replace Running Rail and Accessories

This on-going project periodically replaces curve-worn rail and switch components in high-density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require replacement on a three- to five-year cycle.

Traction Power Equipment Renovation

This long-term program is rehabilitating a wide range of traction power components and subsystems that are aging and deteriorating, leading to lower reliability and higher potential for service disruption. Several traction power system renovation projects are well underway to address the District's immediate needs. These critical needs include the strengthening of third rail coverboards, the removal of asbestos from the 1000 volt breakers, the replacement of unreliable surge suppression equipment, the repair of worn-out 34.5kV cables, replacement of 34.5kV breakers and the upgrade of 1kV breakers. Other individual projects include rectifier reconditioning and the replacement of grounding systems, dielectric liquids in power transformers, traction power control batteries, switch enclosures and gas-pressure pipes.

Replace Traction Power House Roofs

Traction power substations throughout the BART system have been identified as being in poor structural condition and are currently under repair. The roofs are constructed of steel decking and, in some cases, are rusting through. Water incursion into substations can result in traction power failures and serious service disruption.

Right-of-Way Fencing

Wherever BART tracks run on the surface at grade, the length of the right-of-way is fenced to prevent unauthorized and unsafe access to the trackway. This fencing must be replaced periodically due to normal deterioration or vandalism. This critical safety project is currently underway.

Track One Future Projects

Replace Running Rail and Accessories

This on-going project periodically replaces curve-worn rail and switch components in high-density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require replacement on a three- to five-year cycle.

Traction Power Equipment Renovation

The traction power system of the original system has been in continuous service for over 25 years. BART can expect future reliable service if continuous reinvestments are made in renovation of the key elements of this vital system. The current traction power system renovation projects are well underway and principally address the District's immediate needs. The next phase of renovation would continue to replace equipment that has reached the end of its service life and address the increasing power requirements of closer train headways. The following subprojects are proposed: replace and add transformers/rectifiers at key substations, replace transfer trip system cables, replace 1000 volt DC breakers, add 34.5kV cabling for system redundancy, and add redundancy for station power.

Transbay Tube Cathodic Corrosion Protection

This project, described above in the *Projects Completed* section, must be repeated about every ten years.

Tunnel Ventilation

In case of a fire within BART tunnels, the District maintains a series of fans and other equipment to aid evacuation and suppression of the fire. A Track One project replaced all the old ventilation fan blades in tunnels and subways throughout the system. However, these new blades will themselves have to be replaced when they wear out in several years. This program will continue the phased rehabilitation of this equipment started in the completed Track One project.

The underground sections of BART have 74 ventilation fans to control the flow of smoke and to provide fresh air for evacuation in the case of an underground fire emergency. In addition, this equipment is routinely run for minor smoke evacuation, cooling of underground stations and to supply fresh air to BART maintenance personnel while working wayside. BART's current Renovation Program recently replaced fan motors and blades that have been determined by testing to have been at, or near, the end of their service lives. This project continues an aggressive on-going program to ensure that this safety critical equipment is reliable and operational at all times.

Another critical aspect of BART's ventilation design is the rolling steel doors mounted at the east portal of the Berkeley Hills Tunnel. These doors are closed in the case of a fire to ensure that ventilation fans will properly direct the smoke. These doors are 25 years old and in need of replacement. This program will replace these doors.

Lake Merritt Channel Subway Repair

The subway just south of the Lake Merritt Station was constructed under the Lake Merritt Channel and has been leaking for a long time. Repeated attempts to seal the leaks have only partially mitigated the problem. Salt from brackish water intrusion, picked up and sprayed by passing trains, has caused corrosion in the reinforcing steel that in turn is causing damage to concrete components of the subway. This project will seal the subway to stop water intrusion through the subway walls, top slab and bottom slab, remove damaged concrete, remove corrosion from steel reinforcing bars, and apply new concrete to damaged areas to restore structural elements to their original strengths.

Repaint Steel Girders for Corrosion Protection

The steel girders that were installed in the system's original construction have not been painted in more than 20 years. Inspections have revealed that the original paint has deteriorated with signs of corrosion in the steel surfaces. Funds were allocated for the repainting of these girders and a three-phase program was implemented. However, nine original bridges were taken out from the last phase so that the more badly corroded John Daly, Junipero Serra and Washington bridge girders, which were installed in the Daly City Turnback Project, could be repainted. A follow-up project is needed to complete the program. This project will remove the original coats of paint and apply new prime and finish coats that will protect the girders against corrosion in the following bridges for the next 30 years: 105th Avenue, Halcyon Avenue, 55th Street, Telegraph Avenue, Hudson

Avenue, Pleasant Hill Road, North Main Street, Walnut Creek Channel and Marine Avenue.

In addition to these future Track One projects, the District plans to upgrade its emergency standby power system.

Track Two Projects

Track Two Mainline Renovation projects include the replacement of dry standpipes at I-680 and Springbrook crossings and the removal of gaps in emergency handrails and of obstructions on emergency walkways.

Station Renovation Program

The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. Track One of this program consists of 49 projects, 20 of which are completed and 16 of which are underway, including Automatic Fare Collection Equipment Modernization / Translink Implementation.

Projects Completed

Accessible AFC Equipment

This project brought the BART Automatic Fare Collection ticket vending equipment into compliance with current accessibility requirements. This project added automated voice guidance to numerous fare-card vending machines and developed a prototype new swing gate to facilitate wheelchair access.

Stations Security Program

This project increased the illumination levels of surface parking lots, added emergency police call boxes in parking lots, and provided decentralized satellite police station structures to accommodate community-based deployment of BART police forces to increase passenger security.

Repair Concrete Roof of Lake Merritt Station

This project repaired the structurally deteriorated concrete roof and replaced the waterproofing material over a portion of the mezzanine level of the Lake Merritt Station under Oak Street. The damaged concrete roof caused water leakage in the south stairway area, making it necessary to close the stairway whenever it rained. Implementation of this repair work restored the structural integrity of the concrete roof and now provides safe and uninterrupted passenger access between mezzanine and platform levels.

Refurbish and Install In-Storage Faregate Units

The District withdrew 30 faregate units from long-term storage and refurbished them to current standards. They were then installed at various BART locations where additional exit faregates were required due to increasing BART system usage.

Replace Bicycle Lockers

The original bicycle storage lockers at various BART stations had deteriorated to the point of not providing an acceptable level of security and weather protection, and have been replaced with current state-of-the-art bike lockers.

Credit-Debit Vendors

This project is providing new fare-card vending equipment in a number of high volume stations to permit the sale of high value fare-cards charged to credit and debit bankcards.

Replace Maps and Signs in Stations

This project updated and replaced outdated maps and transit information displays in all BART stations. The replacement was required to reflect the new extension stations and to update local transit information. This project provides a graphic display system that is more flexible and more easily updated than the old maps, which had not been updated since they were originally installed in 1972.

Replace Station Roofing

The roofs of stations and weather protection canopies deteriorate with age and exposure to the elements. In order to protect passengers from potential slipping hazards, protect equipment and furnishings, and avoid structural damage, roofing was recently replaced at four BART stations.

MacArthur Station Emergency Exit Upgrade

The District is obligated to ensure that station exiting times are in compliance with the standards cited in the District's 1988 agreement with the California Public Utilities Commission (CPUC). BART had been in compliance until 1995, when platform occupancy loads increased with ridership growth. This project created emergency evacuation paths at MacArthur Station, from the end-of-platform gates at the south end of both platforms to the gap breaker station at MacArthur Boulevard, in order to mitigate an existing safety concern. The new evacuation paths were constructed in accordance with ADA guidelines. Based on computer models created by the BART's Safety Department, the new emergency evacuation paths will ensure compliance with CPUC standards once again.

Repair Stair Tread Edges and Replace Anti-Slip Treatments

The anti-slip treatment originally applied to help protect passengers from slipping and falling on station stairs has worn away in many locations throughout the District. This treatment has been renewed at several stations in order to protect the safety of passengers, especially during wet weather conditions.

Replace Sewage Pumps in Underground Stations

Sewage from bathrooms in underground stations must be pumped up into the city sanitary sewer collection system. The existing pumps had been in place since the BART system opened 25 years ago. They were increasingly unreliable and uneconomical to maintain. These pumps must be functional and were replaced as a matter of passenger convenience and public health.

Other completed Station Renovation projects include: Security Gates at South Hayward Station, Replace Fire Mains at Fremont/Oakland Line, Replace Agent Ticket Readers and Replace Station Fire Alarms.

Other completed projects include the replacement of security gates at some stations, the replacement of station fire alarms and the development of a bill-to-bill prototype.

Projects Currently Underway

Automatic Fare Collection Equipment Modernization / Translink Implementation

The Automatic Fare Collection (AFC) equipment in the BART system is approaching 25 years old and, therefore, is difficult and costly to maintain. This project will replace all ticket vendors, addfare machines and Cubic faregates, and recondition the IBM faregates. The project needs to be done in order to decrease revenue collection and maintenance costs through the use of more modern servicing modules, increase revenue security and accountability through the use of sealed coin and bill units, implement an upgraded Data Acquisition System, and increase equipment availability for customers. The urgency of the project is driven by the need to capture maintenance and security benefits, while avoiding deterioration of customer service levels as the existing equipment approaches the end of its useful service life. An additional need for this project stems from the regional multi-operator Translink "Universal" ticket program that will be integrated with the BART fare equipment.

Interim AFC Equipment Upgrades

The purpose of this project is to design, procure and install material and equipment to maintain operation of the original Automatic Fare Collection (AFC) equipment until the modernized AFC equipment is available to upgrade or replace the original equipment. The original AFC equipment consists of IBM equipment installed in the early 1970s and Cubic equipment installed in the early 1980s. The original equipment requires obsolete parts that are extremely difficult or impossible to obtain, even from component remanufacturers. Other components of the system are becoming extremely unreliable due to age. Still other components in the system, such as the IBM addfare logic, are obsolete and cannot handle recent changes in AFC operational requirements (e.g., fare increases, new ticket types). This project is ensuring the District's ability to effectively collect fares.

Replace and Rehabilitate Escalators and Elevators

BART station escalators and elevators carry extraordinarily heavy loads, particularly in the various downtown subway stations. After 25 years of use and wear-and-tear, they are becoming unreliable and uneconomical to maintain and repair on a routine basis. The unreliability of many of these elevators and escalators is a significant source of passenger dissatisfaction. The 23 most unreliable escalators have been replaced, and all of the other escalators and elevators are being completely reconditioned. To the right is a photograph of a Balboa Park escalator under renovation.

Replace Platform Edge Detection Tiles

The existing platform edge tiles, intended to provide a visual and tactile warning of the adjacent drop-off into the trackway pit, have been worn heavily at many stations due to normal foot traffic, and are delaminating from the platforms as well. They are being replaced so that they will remain safe, functional, and in compliance with ADA, while continuing to ensure passenger safety.

Accessibility Improvements

These projects are providing mandated accessibility modifications to stations throughout the BART system. They are designed to improve the accessibility of the existing stations for disabled persons by providing new accessible route information and signs, modifying the street elevator at the 12th Street Station, removing architectural barriers, and meeting standards for accessible car and van parking. These projects are needed to comply with ADA requirements and to improve passenger comfort and convenience.

Repair Platform Sub-Surfaces at Various Stations

Platform edge sub-surfaces are deteriorating at several stations, causing the platform edge detection tiles to lift and creating potential tripping hazards for passengers. Repairs are required constantly and are very labor intensive. The sub-surfaces are being reconstructed to allow a stronger bond for the tiles.

General Station Renovation Program

This is a multi-year program to improve the original BART stations. Restrooms are being remodeled. Surfaces are being repaired, repainted and retiled as necessary. Weather-protection canopies and windbreaks are being renovated as needed. Repairs are also being made to concrete walkways that have been raised and damaged by growing tree roots and ground movement, causing tripping hazards. Worn station security gates are being replaced. Irrigation systems and landscaping are being reconditioned. Fire alarm systems are being replaced or reconditioned as appropriate. General station lighting and emergency lighting systems are being relamped and upgraded.

Modify Change Machines

The District's old money changers are more than twenty years old and suffer from mechanical breakdowns and design limitations. This project is redesigning and replacing changer components to provide change to the District's passengers more reliably and efficiently.

Replace Bus Transfer Ticket Machines

The bus transfer ticket machines in BART stations are increasingly unreliable, creating inconvenience for passengers who transfer to connecting bus services. This project is replacing 100 of these ticket machines. The 65 cashless machines used in East Bay stations have already been replaced. The 35 money-handling machines, which issue San Francisco Municipal Railway (Muni) transfer tickets, are yet to be replaced. The cash machine specifications are being developed in cooperation with Muni.

MacArthur Station Elevator Replacement

The two elevators in the MacArthur Station are difficult for people with disabilities to access due to the fact that they have to cross a busy roadway to reach them from the station agent's booth and faregates. Also, being remote from the Station Agent, these units are vandalized frequently and are often out of service as a result. These elevators are also susceptible to fare evaders. This project will install new elevators to both platforms within the paid area of the station near the agent's booth.

Track One Future Projects

Repair Stair Tread Edges and Replace Anti-Slip Treatments

The anti-slip treatment originally applied to help protect passengers from slipping and falling on station stairs must be renewed periodically at several stations in order to protect the safety of passengers, especially during wet weather conditions.

Stations Security

Stations in downtown San Francisco, Oakland and Berkeley have experienced increased vandalism and misuse over the past few years. This misuse includes the problem of urination in BART elevators and on escalators, the primary complaint of the disabled community in a recently settled lawsuit with the District. Large multi-level downtown stations are very difficult to police for this type of activity, particularly during late evenings and after revenue service.

This project will replace the present video surveillance system and add security barriers to station entrances (including elevators). The existing cameras are very limited and do not provide the detailed images necessary for prosecution. They also are very limited in number and do not cover areas that have proven to be susceptible to vandalism and other illegal activities. Entrance security barriers would be added to reduce the vandalism and misuse that occurs during non-revenue hours. Lighting improvements will be added in those areas that are known to have security problems and cameras will be added for additional surveillance. All video surveillance will be transmitted to BART police at both their line offices and Lake Merritt Headquarters.

Resurface Parking Lot Pavement

This project is required to repair surface parking lots, the majority of which have not been treated or resurfaced since originally constructed. Subsurface failures, uneven surfaces, potholes, and general degradation of the wearing surface of the pavement are evident in parking lots throughout the system. This project will repair the subsurface as needed, resurface 24 station parking lots with a two-inch asphaltic concrete overlay, and restripe affected stalls and pavement markings.

Replace Station and Yard Personal Address System and Closed Circuit Television Security

This four-part project will replace the original public address, closed circuit platform television and yard public address systems that will have outlived their projected useful lives. In addition, new security cameras will be installed in the core stations that will focus on the AFC equipment. This type of security surveillance is now in service at the five new stations.

General Station Renovation Program

The appearance of a station directly affects the public's perception of BART. Maintaining station function and appearance over the long term requires periodic renovation projects. The existing Systemwide Renovation Program has renovated sixteen of the original thirty-four stations, with four more currently underway. This new program addresses the remaining stations. The renovation work includes: painting station interiors and exteriors; bathroom rehabilitation for ADA compliance; landscaping improvements and energy efficient light fixture replacement; improvements to the station agent's booth and employee facilities; replacement of rolling grill doors; replacement of fire alarm systems; replacement of emergency exit lighting; renovation of drains; and replacement of sanitary, storm and water sewage pumps.

Automatic Fare Collection Equipment Capacity Expansion

The station capacity study indicated the need for additional automatic fare collection (AFC) equipment at many core stations. The need for additional equipment will be further exacerbated by basic underlying patronage growth, by the addition of new destinations due to the BART extensions program, and by the complexities of credit card and "smart card" features being added to the ticket vending machines. This project addresses these needs through a plan to add AFC equipment to those stations that require additional equipment capacity. For planning purposes, the project includes the following additional quantities: 80 ticket vending machines, 40 addfare machines, 100 gate consoles and 40 change-making machines. All vault preparation, cabling, installation, manuals, training, project management, DAS changes and parts complements are included. Major stations modifications or rearrangements may be required to implement this project.

Replace Stewart-Warner Signheads

The destination signs at 28 of the original stations have been in service for 25 years. They are near or beyond their useful lives, and have increasing failure rates and maintenance costs. BART's future operation may also require the ability to display different information on each of the signs along a single platform, which is not possible with the existing signs and controls at these original 28 stations.

Station Reroofing

The present renovation program will reroof only a few of the twenty-two roofed core stations. This project will continue this program to complete the remaining stations. All roof insulation and flashing will be replaced by this project.

Track Two Projects

Replace Platform Edge Detectable Warning Treatment at 20 Stations

This project will be needed to replace edge tiles that will have deteriorated over time. This project will remove existing edge tiles, prepare surface and provide new detectable platform edge treatments.

Remote Monitoring for Escalators and Elevators at Extensions Stations

The present escalator renovation project includes installation of a remote monitoring system. This system will provide a central monitoring station inside BART Central Operations and at the Oakland Shops. Whenever any escalator or elevator stops functioning, a message will be sent to both monitoring stations and will identify the cause of stoppage. The remote monitoring provides immediate and automatic notification to Central and Maintenance of any escalator or elevator stoppage. This eliminates the delay of notification from the Station Agent and also provides more accurate information of the cause of the problem. With accurate information, maintenance crews can be better prepared to correct the problem when dispatched. This project includes the extension stations, connecting them to the remote monitoring system installed in the escalator and elevator renovation projects.

Replacement or Renovation of Garage and Other Elevators

Many of the Districts' non-station elevators are at, or near, the end of their service lives. This program would evaluate each elevator unit to determine if it should be replaced or renovated, similar to the District's present renovation program of BART station elevators. This program would include BART's main office building units, parking structures, and shop buildings. Many of these elevator units are over 25 years old and replacement parts are becoming more difficult to obtain.

Other Track Two projects include the replacement of the North Berkeley Station ceiling, additional general station renovation, the replacement of hydraulic lift cylinders, additional AFC upgrades and energy conservation.

Controls & Communications Renovation Program

The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. This program includes 29 Track One projects, eight of which are completed and eight of which, such as Advanced Automatic Train Control, are underway.

Projects Completed

Replace Maintenance Vehicle Detection Devices

This project replaced the maintenance vehicle detection devices used in specialized high-rail maintenance vehicles. These essential vehicle detection devices allow Central Control to observe the location of on-track maintenance vehicles. They also serve as a safety device to prevent trains from entering into a work area where a maintenance vehicle is occupying mainline track. The new units replaced those which had been in service for over 24 years and which had been experiencing increasingly higher failure rates. When a failure occurred, the high-rail maintenance vehicle had to be removed from the mainline track per the requirements of the California Public Utilities Commission, resulting in non-productive time in maintenance work schedules and the need for single tracking.

Reverse Running in Transbay Tube

In the past, older train control electronics restricted reverse running in the Transbay Tube to one train at a time. Reverse running is a critically important function for recovering quickly from service disruptions in the Tube. This modification to train control electronics provided the necessary signaling to allow up to three trains to run simultaneously in the Transbay Tube.

Replace MetroVision Sign Units

This project replaced the MetroVision sign units in the downtown San Francisco and Oakland BART stations. These older video-display units were replaced with the same type of updated dot-matrix sign units as those that are now used in the new BART Extension stations.

Replace MARIS

This project replaced the District's 25-year-old Maintenance and Reliability Information System (MARIS), which tracks maintenance needs, maintenance completed, and impacts on inventory.

The District has also completed its Yard Control System Improvement project and projects that enhance train identification, improve emergency control center back-up and upgrade the District's cash handling system.

Projects Currently Underway

NXTGEN Program

This project is replacing obsolete on-line operational computer control systems. The systems being replaced are the Destination Sign System (DSS) software, the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the Central Computer System (CCS). This project is needed to replace the 25-year-old computers running the DAS and DSS systems and the 15-year-old CCS computers.

Fiber Optic/ Radio Telecommunications Network (TRACS)

This project is furnishing and installing a systemwide fiber-optic and multi-frequency trunked radio network to replace the equipment used by train operations, station operations, BART Police, and maintenance forces. The old radio system had several significant shortcomings, both in terms of capacity and reliability, which had frequent negative operational impacts and occasionally would affect passenger safety. This project is being implemented through an innovative joint development program, with significant long-term revenue potential.

Advanced Automatic Train Control (AATC)

BART is currently testing, and will subsequently install, an advanced train control technology, which will enable the BART system to nearly double its train carrying capacity. When implemented between Bay Fair and Daly City stations, this project will allow system throughput to increase from the current 21 trains per hour up to 30 trains per hour. The system will be installed over the existing control equipment with relative ease and no service disruptions. AATC will permit more accurate monitoring of train location, allow reduced run times and, thereby, increase the efficiency of the vehicle fleet. The project will help BART to meet the increased demands on the system, as headway reductions become necessary in the future, as well as displace significant needs for train control renovation. In the following photograph, a AATC antenna is being installed in a ring tunnel section near the Lake Merritt Station for AATC Phase II.

Replace Workstation Consoles in Central Control

This project is replacing existing Central Control workstations that are obsolete and cannot be expanded. This project provides the display hardware, local area network (LAN) interface equipment, software, installation and testing to make the units fully functional in BART's Central Control facility.

Wayside Train Control Renovation

This is a long-term program to replace vital train control components and subsystems that are becoming unreliable due to age, and difficult to maintain due to obsolescence. Many of these components are no longer being produced or supported by the original manufacturers. If this work is not completed in a timely manner, essential train control hardware failures could lead to extensive service disruptions. This program is also replacing the Sequential Occupancy Release System (SORS). SORS is a back-up safety system required by the California Public Utilities Commission to ensure that on-line trains maintain a safe separation distance in the event of any malfunction or failure of the main train control system. The original primary SORS computer is 25 years old, obsolete, and becoming difficult to maintain. This safety-critical system must remain operational and reliable.

Second Communications Specialist Workstation in Central Control

As the new BART extensions become operational and the number of trains on-line increases, it is necessary to create a second communications workstation from which BART communications specialists in Central Control can make essential announcements about train movements, service disruptions, special conditions and other events that affect passengers.

The Yard Cable Plant Replacement project is also underway.

Track One Future Projects

Installation of AATC Complementary Technology: Broken Rail and Silent Train Detection

The AATC system cannot detect vehicles that are "silent" to the AATC radio system. Additional development to the AATC system needs to occur to permit the detection of "silent" vehicles. Since AATC is a radio-based system, AATC cannot detect the condition of the rail. As AATC is presently being implemented, detection of these conditions will be provided by the track-circuit-based Westinghouse train detection system. The Westinghouse system is beyond its design life and needs replacing. In order to replace the Westinghouse train control system and allow AATC to become a stand-alone system, the AATC system needs to be augmented with silent train detection and broken rail detection.

Installation of AATC Complementary Technology: Program Stop

The automatic operation of berthing a train at a passenger station is called program stop. Presently the program stop is accomplished by coordination of the wayside Westinghouse train control system and the car-borne train control system. To fully replace the Westinghouse train control system, this function needs to be incorporated into the AATC system.

Central Computer System Software Development to Support AATC

The current Central Computer System (CCS) software was developed with the constraints of the Westinghouse train control equipment and therefore has a limited ability to control the movement of the trains. In contrast, the AATC system exerts very fine control over train movement. AATC can also determine the location of trains on the BART mainline to within 30 feet. In order for the Operations Center to most effectively operate the AATC-based train control system, the CCS core train management logic and computer displays in the current CCS software must be restructured.

Installation of AATC on Remainder of Core System

Presently the car-borne automatic train control system has specialized electronics required to detect track signals from the Westinghouse wayside train control equipment. The AATC system does not require these electronics. Consequently, the cost of car-borne ATC replacement can be minimized. The AATC system has one-third the components of the Westinghouse system and therefore will be significantly less costly to maintain. AATC will permit more accurate monitoring of train location, allow reduced run times and, thereby, increase the efficiency of the vehicle fleet. This project will install AATC on the remainder of the core system (A/R/C/K lines). The project will help BART to meet the increased demands on the system, as headway reductions become necessary in the future, as well as displace significant needs for train control renovation.

Replace Original DTS Data Communications System Equipment at 44 Locations

BART is a highly automated mass transit system. A complex set of remote and central computer systems monitors many support functions, including train operations. To best manage this distributed system, it is necessary to continuously monitor and control this equipment automatically. The overall supervision of this system is performed in BART's Operations Control Center (OCC), where OCC staff receive data from every BART station control point. The original data communication system, called the Digital Transmission System (DTS), is the key means to bring this data to the OCC. The DTS provides digital communications between the central computer system (CCS) at Lake Merritt and all original BART passenger stations, yards, the Transbay Tube, and the Berkeley Hills Tunnel. The DTS is part of the first-generation BART equipment and 25 years later represents a system that is difficult to maintain, lacks sufficient spare parts, and has some components that cannot be replaced with modern components.

With the construction of BART's new extension stations, the DTS was replaced with the Supervisor Control & Data Acquisition System (SCADA). This system represents the new technology standard that will serve the District well into the next millennium. This project will replace the District's original data communications system with the new SCADA system at 44 locations within the original BART system.

Replacement of Interlocking Relay-based Logic with Microprocessor-based Logic

The existing interlocking relay-based logic controllers, a critical element of the train control system, are 30 years old. Most of the relay equipment is no longer manufactured. The industry is moving to microprocessor-based controllers. Consequently obtaining interlocking type relays is increasingly difficult. Lead-time for procurement is now a minimum of 20 weeks. The existing relay physical plant has aged to the point where the relays are physically deteriorating. Relay logic controllers will need to be refurbished or replaced. To improve the service operations, the relay-based logic controllers have been expanded over time and presently are at capacity. Future expansion of the existing relay logic controllers is very difficult and expensive. Replacement of the relay-based logic with microprocessor-based logic will resolve the capacity issues of space, power, and logic size.

Wayside Wiring for Interlocking - Replace Underground

By the time this project is commenced, the wayside wiring may be 45 years old. The design life of the wire, however, is estimated at 40 years. This project will replace the interlocking power and control wiring from the switch machine to wayside junction boxes. All such wiring on the core BART system would be replaced in coordination with the replacement of wooden ties at interlockings.

Richmond and Daly City Yard Console Replacement

The control console in the Richmond Tower is 30 years old. The equipment is obsolete and difficult to maintain. The Daly City console is ten years old and supporting electronics have been heavily modified to support the Colma expansion. In addition, the Daly City equipment is obsolete and spare parts are an issue. All this equipment is vital for the day-to-day operation of the yards and continued performance needed to meet the requirements of yard operations.

Other Track One future projects include the augmentation of police radio coverage, the improvement of operations and fire protection radios and the replacement of yard voice recorders.

Track Two Projects

Replace Operating System Computer Hardware

The high performance computers necessary to run BART's operating systems will become more difficult to maintain as they become older and technology changes. The main operating computers should therefore be replaced every seven to ten years to ensure that these critical systems for operation of BART trains and data collection systems are reliable and maintainable. This cycle necessitates that the District plan well in advance to ensure that a seamless transition to new computing equipment can take place before serious system disruptions occur.

The operating computer system controls and supervises many of the key operating systems of the District. These include: Operation Control Center (OCC), Data Acquisition System (DAS), Destination Sign System (DSS) and BART station computers for line functions such as the interface from credit/debit vendors to the District's bank for ticket purchases. All of these systems have been incorporated in the current Track One NXTgen projects that will be completed soon. The NXTgen program was designed with an "open system" architecture that will facilitate the future hardware renewals that this program proposes. This program will utilize the benefits of the software "open system" to purchase new computers to serve the District's ever increasing computing needs.

Replace District Telephone Systems

This project will replace all of the District telephone systems. This includes the nineteen PABX switches at BART offices, all of the Extension stations, the line offices and all of the telephone instruments connected thereto. Certain portions of the telephone cable plant will also need to be replaced. PABX software will be required to meet the increased demands of operations.

As the equipment ages, spare parts will no longer be manufactured for much of this old equipment, making it very difficult and costly to maintain. In addition, many enhanced communication functions will be required that the present equipment does not provide. These capabilities will include voice/data integration, digital Internet access and video conferencing support among others. This project will utilize the fiber optic "back-bone" being installed in the Track One program.

Automatic Vehicle Identification Readers at Yards and Other Locations

BART performs revenue vehicle tracking and accounting via manual systems for cars in yards, and via MARIS for cars on the mainline. These systems do not provide for data exchange between them and as a consequence often contain incomplete or incorrect information. This affects efficient operation of the yards including locating cars needing maintenance and repair. This project would include the procurement and installation of new Automatic Vehicle Identification (AVI) scanners and the installation of wiring and interfaces between Yard Control Systems and MARIS.

Network Equipment Replacement: Administration/Operational Networks

There is an ever-increasing need for additional information-based services at the desktop of District personnel. For example, interaction with other agencies, contractors, suppliers, etc. is required at an accelerating rate. The architecture of the present office network will be unable to support these requirements including the requirement for much faster speeds. In addition, spare parts will no longer be available for this equipment. Parts for networking equipment are typically stocked for about a five-year period at best.

This project will replace all the District data networking equipment. This includes approximately 40 network hubs which have been in service for many years to support the personal computers in most District offices, as well as those which support approximately 60 operational locations, such as station agent booths, radio transmitters, AFC equipment, destination signs, train control equipment, etc. Much of the cabling for the office computer network will need to be replaced as well.

In addition to the above-described Track Two projects, the District plans to install AATC on the remainder of the system and to install new systems in its yards, shops and towers.

Facility Renovation and Replacement Program

The purpose of this program of projects is to address the deterioration of the shops and yards due to 25 years of continuous use and age, and to provide adequate facilities to store and maintain a growing fleet of revenue vehicles. Some of these projects will improve passenger transit service by improving revenue vehicle reliability through better maintenance, by reducing vehicle out-of-service time, and by keeping as many vehicles in service as possible. These projects will improve the safety of the shops and yards, provide cost savings to the District by reducing maintenance turn-around time, eliminate travel time to and from vendors and improve the efficiency of the shops and yards by providing employees with dependable equipment. 12 of the 25 Track One projects in this program are completed, with ten underway.

Projects Completed

Fire Main Replacement at Hayward Yard

Two fire mains had to be removed due to leaks and a subsequent increase in surface water buildup. The leaking was becoming a safety hazard and posed a serious threat to the building foundations. One of the fire mains was located beneath the shop apron slab and was replaced with an overhead pipe. This project also installed a new fire main beginning at a new street tie-in. The new main was connected to the new overhead pipe through the center of the shop to feed the existing fire protection system.

Wheel Truing Machines

This project replaced a 25-year-old wheel truing machine in the Hayward Shop. A new, second wheel truing machine was also installed at the Richmond Shop. The new, more reliable and higher capacity truing machines allow the District to go to a higher standard of preventive maintenance for wheel profiles, increase productivity, and result in lower load factors since fewer cars are being held out-of-service waiting for wheel re-profiling.

Yard Fuel Tanks

This project installed 500-gallon above-ground gasoline tanks and dispensing units at the Richmond and Hayward yards. This is an efficiency improvement that has eliminated the need to bring maintenance vehicles from these outlying yards into the Oakland Yard to refuel.

Richmond Yard Efficiency Improvements

This project reconfigured trackwork at the Richmond Shop to improve staging and routing of cars.

Replace Dust Collector Systems at the Richmond & Concord Shops

This project brought the Richmond and Concord blow-pit ventilation systems into compliance with CalOSHA regulations regarding employee exposure to airborne contaminants, as well as renovated the shop's heating and cooling systems.

MetroCenter Building Fuel Tank

The old 4,000 gallon fuel tank located in the parking lot of the MetroCenter Building, which provides fuel for the emergency generator located on the roof of that building, was no longer in compliance with regulations for underground fuel storage. It has been replaced.

Richmond Yard Security Enhancement

BART employees had become increasingly concerned with their safety while working in the Richmond Shop and Yard. Although no District employees have been targeted, gunfire from the surrounding community has hit several buildings. This project enhances personnel safety by improving specific features at the Richmond Yard Facility, including the entry gates, access roads, fencing, and lighting.

Replace Parts-Washing Facilities in All Shops

This project is replacing parts-washing facilities in all shops so the District will comply with environmental requirements. Parts-washing wastewater needs to be specially handled to meet environmental discharge laws. The District will be subject to citations and a possible shutdown of facilities, if found not to be in compliance.

Other completed Facility Renovation projects include: Hayward Test Track Security Alarm, Concord and Richmond Yard Track Crossings, Wheel Press at Hayward Shop, Oil and Water Separators at Richmond and Hayward Shops and Richmond Shop Roof Repairs.

Projects Currently Underway

Hayward Shop Traction Motor Repair Facility

This project is renovating the Hayward shop and replacing old shop maintenance equipment. This renovation is necessary to keep up with increased demand, will result in increased productivity, and will reduce the time cars are held out of service for repairs.

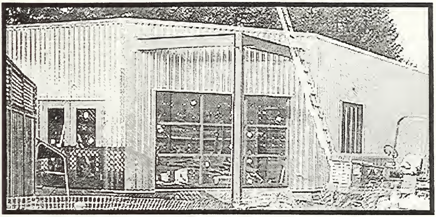
Employee Facilities Improvements

The infrastructure of employee worksites in the maintenance shops, training facilities, warehouses, and the Cash Handling Building has not changed substantially since the BART system opened. This project is providing basic essential reconditioning and remodeling as needed to create acceptable work environments.

Richmond Transit Vehicle Washer Facility Overhaul

The facilities used to wash the exterior of transit vehicles are still the original system installations. They are becoming increasingly inefficient, and have difficulty complying with current standards for containment and treatment of wastewater. This project is bringing the Richmond Yard car washer back up to full operation, and also providing wastewater controls.

Reconfigure and Renovate Transportation Buildings



These buildings, one of which is depicted in the photograph at the right, are located at the train dispatch yards and provide the essential administrative facilities for on-site train operations, as well as lunch/break rooms, locker rooms, and other support facilities for on-duty train operators. These buildings are being reconfigured to serve the increased number of operators required to provide higher service levels. At the same time, the existing structures are being reconditioned and remodeled as necessary.

Non-Stock Inventory (repairable parts provisioning)

This program maintains adequate inventory of all high-value repairable parts in support of transit vehicles, station and field equipment, and automatic fare collection equipment. Failure to provide for these requirements could lead to vehicles being out-of-service and disruption in maintenance and service operations. This on-going need must be funded annually.

Track One Future Projects

Reroofing at the Shops and Other District Facilities

Some District buildings, such as the shops, still have their original roofing systems that are in poor condition. Typically, the original roofing systems have numerous bubbles and are brittle. These conditions indicate loss of adhesion between plies caused by water intrusion. Furthermore, most of the flashings are blistered and cracked. Some areas of the roofs feel spongy while some areas are depressed. These conditions indicate wet or deteriorated roof insulation. This project will remove roofing, insulation and flashing at all revenue vehicle shops, non-revenue vehicle shops and maintenance shops throughout the District, and replace them with roofing systems that are guaranteed for 15 years. These roofs must be replaced periodically as they deteriorate due to age and exposure.

Non-Stock Inventory (repairable parts provisioning)

This program maintains adequate inventory of all high-value repairable parts in support of transit vehicles, station and field equipment, and automatic fare collection equipment. Failure to provide for these requirements could lead to vehicles being out-of-service and disruption in maintenance and service operations. This on-going need must be funded annually.

Track Two Projects

Recondition Shop Cranes

The existing heavy maintenance cranes located in the East Bay shops are still the original installations. Safe operation of these lifting units must be ensured through periodic reconditioning.

Additional Storage Facilities

Serious deficiencies currently exist in all storage facilities. BART currently utilizes a combination of District-owned and rental space for the storage and distribution of inventory materials. Storage space shortages will be more severe as inventory for expanded operation comes online. An assessment by staff indicates a significant increase in stock-keeping units, both consumable and repairable, over the next few years, plus additional storage needs further down the line. This project will construct and/or acquire a centralized storage and physical distribution center. The facility will be built to accommodate the repair shops and storage needs through 2010.

Overhead Cranes Renovation at Shops

The overhead bridge cranes in the four shops are over 25 years old, and many of their major components are near the end of their service lives. In addition, they do not meet new seismic requirements for heavy-duty cranes. This equipment is used on a daily basis in the repair and maintenance of the BART fleet. The age of the equipment has made it difficult to find replacement parts. This project will renovate these cranes with modern components that will improve crane reliability, safety, and performance.

Transit Vehicle Washer Facilities at Hayward and Concord

The facilities used to wash the exterior of transit vehicles are still the original system installations. They are becoming increasingly inefficient, and have difficulty complying with current standards for containment and treatment of wastewater. This project will bring the Hayward and Concord Yards' car washers back up to full operation, and also provide wastewater controls.

Other Track Two projects include the rehabilitation of the TransBay Tube facility, resurfacing of roads and parking lots, relamping at shops and yards, facility painting and repair, shop roll up door replacement, Oakland Shop fuel facility replacement, development of a train operator training simulator, Lake Merritt building renovation, grease/oil facilities replacement and renovation of storage area canopy, lighting and office at Richmond Shop.

Work Equipment Program

The purpose of this program is to replace worn and obsolete maintenance vehicles, service vehicles, and maintenance equipment. The equipment includes such items as tools, power generator sets, light towers, ground and building maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police vehicles, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

BART's maintenance equipment gradually becomes worn from frequent use. Eventually, it becomes more economical to replace the old equipment rather than to repair it. The ongoing equipment replacement program ensures that old, worn out equipment is replaced regularly to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to passengers will deteriorate.

EXTENSIONS PROGRAM

Growing the BART System

BART has experienced an extraordinary period of growth over the past several years. System extensions to Colma, Pittsburg/Bay Point, and Dublin/Pleasanton have added 23.5 miles of mainline and five new stations. Fiscal Year 1999 saw meaningful gains in the implementation and funding of BART's extensions program. For the East Bay, the first increment of grant funding was secured for preliminary engineering and environmental analysis for the Oakland Airport Connector.

For the West Bay, May 1999 was a milestone month for the BART's extension to San Francisco International Airport (SFIA), marking the first full year of construction under the Line, Trackwork and Systems contract, the largest of four design-build contracts for the project. In addition, BART issued three contracts associated with the extension to San Francisco International Airport (SFIA) and Millbrae this fiscal year. Site preparation and utility relocation are already well underway. Under a second contract, subway and station construction now stretches over 1.25 miles. A third contract was issued that will build the BART-Caltrain intermodal station at Millbrae. The Airport itself has separately contracted for construction of the BART station to be located at the new International Terminal. On a dollar value basis, funding for 92% of the contract costs for the extension has already been committed.

Phase 1 Extensions

The purpose of the Phase 1 Extensions Program is to expand the BART rail system to areas not yet directly served by BART, but where extension commitments have been made. The areas include eastern Contra Costa and Alameda Counties, southern Alameda County, and northern San Mateo County. This program includes project planning and environmental review; property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and the purchase of vehicles.

Projects Completed

Castro Valley and Dublin/Pleasanton

This project, which opened in May 1997, is a 13.8-mile double-track, new branch line extension to the original BART system. It begins with a connection to the existing Fremont BART line just south of the Bay Fair Station in San Leandro and continues eastward in the median of the I-238 and I-580 freeways to the end of the project at Dublin/Pleasanton. Currently, there are two stations on this extension: one in Castro Valley located at I-580 and Redwood Road, and a second station in East Dublin/Pleasanton near Hacienda Business Park. A third station at West Dublin/Pleasanton near Stoneridge Mall will be added when funding is secured.

North Concord-Martinez and Pittsburg/Bay Point

This project is a 7.8-mile double-track extension with two stations. It runs north from the existing Concord Station to a new North Concord-Martinez Station and then east along Route 4 to a Pittsburg/Bay Point Station. Additionally, improvements were made to the existing Concord Yard to increase operating efficiency on the extended line. The North Concord-Martinez Station opened in December 1995. The further extension to Pittsburg/Bay Point opened in December 1996. This project will be extended to Railroad Avenue in Pittsburg when funding is secured.

Colma

The Colma Extension, which opened in February 1996, added a new station, parking garage, and bus transfer facility approximately one mile past the Daly City Station. This project has relieved access and traffic circulation problems at the Daly City Station and has provided additional BART system access via I-280 and Route 1. It is also the first leg of the extension to San Francisco International Airport, which is now under construction.

Projects Currently Underway

BART- SFO Extension

By providing an alternative to driving to the SFIA, the BART-SFO Extension will help diminish the volume of cars on the already congested US 101 and 280 corridors, thereby reducing traffic congestion, fuel consumption and air pollution in the Bay Area. When completed, this extension will provide a convenient, cost-efficient intermodal transportation link between BART, Caltrain, SamTrans, West Bay communities and East Bay communities.

BART SFO
Making the Bay Connection

The BART-SFO Extension is the result of nearly 25 years of coordinated regional and local planning and is spearheaded by a partnership among six transportation entities, including BART, FTA, SFIA, the California Transportation Commission (CTC), San Mateo County Transit District (SamTrans) and MTC.

The BART-SFO Extension will continue the BART system further into San Mateo County from the new Colma Station to a station at SFIA, with three other stations at South San Francisco, San Bruno, and Millbrae.

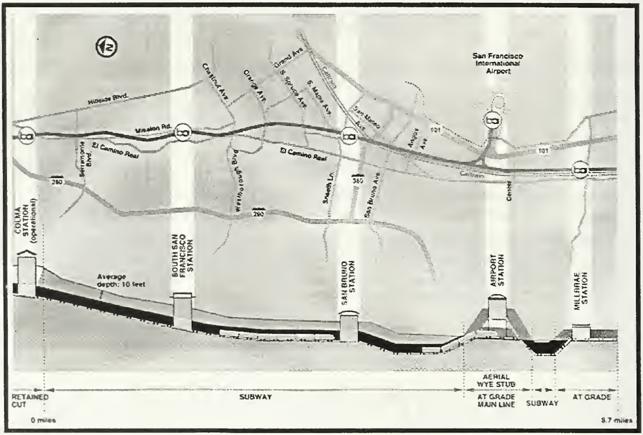
The intermodal station at Millbrae will directly link BART to Caltrain via a shared, connecting platform. Although BART and Caltrain will remain independent systems, the intermodal connection at Millbrae will offer the advantage of continuous rail travel throughout the Bay Area, providing transit passengers with 180.7 miles of regional rail system along the Peninsula Corridor. The Millbrae Station, the largest of the new stations, will be located north of the Millbrae Overpass and west of US Highway 101. The station's concourse will connect on the east side to SamTrans buses, kiss-and-ride drop-offs and on-site parking facilities for approximately 3,000 vehicles. Many access facilities are included in the station plan, including a tactile guide path for sight impaired users, specially designed elevators for easy wheelchair access and pedestrian and bicycle access. Bicycle lockers and racks will be provided at both sides of the station, located near the main access routes.

The South San Francisco station will be located between El Camino Real and Mission Road, north of Kaiser Permanente and south of old Macy's warehouse. The Hickey Boulevard Extension and a new BART access road will provide direct access to SamTrans bus bays, kiss-and-ride drop-offs and parking for over 1,300 cars.

The San Bruno station will be located on Huntington Avenue, behind the Tanforan Shopping Center and north of Interstate 380. A plaza will connect the station and the shopping center and a 1,000 space parking structure, accessible from Sneath Lane, will be situated over the SamTrans bus bays on Huntington Avenue.

Once completed, the joint BART/Airport Rail Transit station will be located at SFIA Concourse H, adjacent to the new International Terminal. A set of quality standards approved by the BART Board of Directors will ensure that the majority of riders arrive within a five minute walk to their ticket counter.

The following is a graphic illustration of the BART-SFO Extension alignment, which will add 8.7 miles of new passenger service track to the BART system at an average depth of 10 feet.



Track One Future Projects

Warm Springs/Santa Clara Phase I

The Warm Springs/Santa Clara Phase I Extension, as currently defined, would extend 5.4 miles of double track from the existing Fremont Station, continuing southward in the railroad corridor and terminating at the Warm Springs Station just south of Grimmer Avenue in Fremont. An intermediate station is planned at Washington Boulevard in the Irvington District. Regional funding commitments have been secured for a portion of the cost of this project. On this basis, this project is partially listed in Track One, with the remaining unfunded balance in Track Two.

Oakland Airport Connector

The Oakland Airport Connector Project would directly connect the BART Oakland Airport/Coliseum Station with the Oakland Airport terminals via a fully automated, elevated train system, providing improved transit service for air travelers and air terminal employees. The Connector, a solution favored by the Port of Oakland and the Coliseum community, is projected to carry 3.3 million people per year by 2010 and transport passengers five times faster than ground-based transit. Funding for environmental assessment and preliminary engineering has been secured, and these project elements are listed in Track One. The remaining unfunded balance for construction is in Track Two.

Track Two Projects

West Dublin/Pleasanton Station

The Dublin/Pleasanton Extension currently includes two stations: one in Castro Valley and a second station in East Dublin/Pleasanton near Hacienda Business Park. Although both of these stations opened in May 1997, the East Dublin/Pleasanton Station is already so heavily utilized that the parking lot is full by mid-morning. Also, for many commuters living in the Dublin/Pleasanton area, this station is in the opposite direction from their commute destinations. The original plans for the extension therefore called for a third station at West Dublin/Pleasanton near Stoneridge Mall, which was deferred due to funding constraints.

In June 1998, BART issued a request for proposals for the joint development of the West Dublin station and adjacent real estate. A development company was selected by BART for exclusive negotiations to assess the viability of using lease revenues from mixed-use, private development to construct a BART station and ancillary facilities. BART and the development company are working with the Cities of Dublin and Pleasanton to assess opportunities, constraints and a means of financing the overall project. The project, when designed, will include parking, a bus transfer facility, and one or more of the following: office space, a hotel, residential units, and/or retail space. The joint development of both the West Dublin Station and adjacent land will enable BART to construct the station much earlier than otherwise possible by substantially reducing the amount of public funding required to build the station and by providing services and amenities accessible to BART riders.

Phase 2 and 3 System Extensions

The BART capital program includes the future planned extensions to Antioch, Livermore, northwestern Contra Costa County, the San Ramon Valley, the South Bay, and other corridors. BART will continue working with these communities, and will pursue funding for further planning and development of these projects. However, funding constraints indicate that their implementation will not be likely within the FY 2000 through FY 2010 timeframe of this current BART capital program.

Commuter Rail System

Another approach to providing high-quality rail service to some of the planned Phase 2 and 3 extension corridors relatively soon is traditional commuter rail. BART has completed evaluations of several possible new commuter rail lines to serve these corridors (and beyond). This commuter rail program could add significant new passenger rail service to the regional rail network. The program identifies a comprehensive service plan that would provide a near-term commute alternative, including critical intermodal connections, to alleviate bottlenecking in some of the most heavily congested commuter corridors in the Bay Area.

SEISMIC RETROFIT PROGRAM

The earthquakes of Loma Prieta in 1989, Northridge in 1994, and Kobe in 1995 have caused seismic engineers and geologists to re-evaluate design codes, particularly in areas where structures are very close to active faults. The Hayward Fault is of great concern because of its close proximity to the District's Dublin/Pleasanton, Concord, Richmond and Pittsburg/Bay Point lines. Seismic experts have estimated a one in four chance of a major earthquake of a magnitude 7.0 or greater at a location on the Hayward Fault within the next 30 years. An earthquake of this magnitude has the potential to cause serious damage to BART structures. The damage caused by such an earthquake could require significant repair and replacement of components of the system.

While BART's original designers utilized seismic design standards that greatly exceeded standards of the time, new understanding of seismic ground movements combined with computer analysis tools have changed the way engineers design for earthquakes today. BART structures, when examined using today's criteria, require a retrofit upgrade program to ensure satisfactory performance through a major seismic event. This program addresses the single pier viaduct structures, which are likely to be most vulnerable in an earthquake, in addition to other trackway structures, stations and buildings of the District.

In addition, the seismic joints of the Transbay Tube, located at each end of the Tube, require re-adjustment. These joints were designed to permit independent movement, but from settlement over time and the Loma Prieta Earthquake, have lost some of their capabilities to move and adjust in a major earthquake. This program would restore their capability to nearly the original range of free movement.

The program is to be implemented in five segments over a period of seven to nine years:

Segment I: Caltrans Local Seismic Retrofit Program

After the Loma Prieta Earthquake, the California State Legislature passed a 1989 law that charged Caltrans with the responsibility to review all publicly owned pedestrian, vehicular, and rail transit bridges over city and county roads and streets. This law also mandated that Caltrans retrofit any such structures determined to be vulnerable to collapse during a severe earthquake. As a result, Caltrans established the Local Seismic Retrofit program to accomplish these tasks. The BART system has many transit bridges over city and county streets and, therefore, was included in the program. Caltrans, with BART's assistance, completed an inventory of BART bridges that identifies 261 bridges that cross over city or county streets. Of that total, 34 are extension bridges that were designed to the latest BART seismic criteria. The remaining 227 structures are bridges of the original system and qualify now for inclusion in the program. Caltrans will do a seismic safety screening to determine if any of the 34 extension bridges will be included in the program.

Aware of the high probability that a high magnitude earthquake will strike the Bay Area in the near future, BART Engineering presented to upper management and the Board a systemwide seismic retrofit program. The purpose of the program is to upgrade the facilities of the original system such that their seismic-resisting capabilities are consistent with the newer extension facilities, which were designed and built to higher design standards.

Under Caltrans' program, seismic retrofits are to meet a Non-Collapse Standard. This performance standard allows major damage to structures during a major earthquake as long as collapse is prevented. BART's needs are more appropriately met by retrofitting to a BART-defined Serviceability Standard. This stringent performance standard allows only a minimal damage to facilities during a major earthquake to ensure resumption of operations after minimal delay. Acknowledging the need for this stringent performance standard, the BART Board of Directors passed a resolution requiring that seismic retrofits of BART facilities are to be in accordance with the Serviceability Standard.

Seismic retrofit to meet Caltrans' standard has built-in requirements that automatically trigger the kinds of retrofit that will also meet BART's standard. For that reason, the differences between the two standards in a large number of BART's bridge structures are not as great as their descriptions may suggest.

Caltrans will fund 100% of eligible BART retrofits up to Caltrans' Non-Collapse Standard. Reimbursable costs include engineering, management, construction and support overheads. Per Board Resolution, retrofits under the Caltrans program will be upgraded from the Non-Collapse to BART's Serviceability Standard. The cost of the upgrade is to be borne by BART and must be pre-determined and accepted by both parties before the program can proceed to succeeding phases.

Segment II: Seismic Lifeline Program

The Seismic Lifeline Program will retrofit aerial structures not included in the Caltrans Local Seismic Retrofit Program, from the Coliseum Station to the Oakland Wye; from the west portal of the Berkeley Hills Tunnel to the Wye; from Ashby Station to MacArthur Station; and from the Wye to Colma station. *Segment II* also includes adjustment of the seismic joints in the Transbay Tube. The objective of *Segment II* is to ensure a core system of operation, with turnbacks for each trunk and access to the Oakland and Daly City shops. In addition, *Segment II* includes a systemwide seismic safety study that will identify the critical seismic retrofit needs of the BART system.

Segment III: Additional Critical Aerial Structures and Stations Program

Segment III will retrofit the aerial structures from the Coliseum Station to South Hayward Station, adding direct access to the Hayward Yard and connecting the Dublin/Pleasanton line to the system. In addition, *Segment III* will retrofit those stations deemed to be seismically most at risk by a systemwide seismic safety study.

Segment IV: Aerial Structures and Aerial, At-Grade & Underground Stations Program

Segment IV will retrofit the remaining single pier trackway structures south of Hayward Yard (Fremont line), north of Berkeley (Richmond line), and east of Orinda (Pittsburg/Bay Point line). *Segment IV* will also include other stations deemed to be at risk by a systemwide seismic safety study, but not addressed in *Segment III*.

Segment V: All Other BART Facilities Program

Segment V will retrofit BART facilities and other structures deemed to be seismically at risk by a systemwide seismic safety study, and not covered by the previous segments.

Projects Currently Underway

Caltrans Engineering Study

This Caltrans-sponsored engineering study will identify those BART structures the seismic-triggered collapse of which would put non-BART infrastructure at risk and to estimate the cost of seismically retrofitting such structures. This study will further identify those retrofits needed to meet BART's Serviceability Standard and to assess the cost of such retrofit.

Track One Future Projects

Caltrans Local Seismic Retrofit Program

This Caltrans-sponsored project will implement the seismic improvements to the BART structures identified by the engineering study as preliminarily described under *Segment I* above. This project element is listed as Track One on the basis of Caltrans' funding commitment.

Retrofit Seismic Joints of Transbay Tube and West Oakland Station

This project element is a component of *Segment II: Seismic Lifeline Program*. It would restore and/or increase the designed movement capacity of the joints thereby lessening the possibility of joint failure. Joint failure could cause flooding in the Tube. This project element is listed in Track One on the basis of a pending Section 5307 grant programming request.

Seismically Retrofit Aerial Structures from Transbay Tube to West Oakland Station

This project element is a component of *Segment II: Seismic Lifeline Program*. It would strengthen the aerial structures of this lifeline corridor segment of the BART system that provides safe passage from the Tube to West Oakland Station, for emergency evacuation if necessary during an earthquake. This segment in particular requires strengthening, because the aerial structures are founded on spread footings over weak soil that is prone to failure during earthquakes. This project element is listed in Track One on the basis of a pending Section 5307 grant programming request.

Seismically Retrofit Aerial Structures from West Oakland Station to Oakland Wye

This project element is a component of *Segment II: Seismic Lifeline Program*. It would strengthen the aerial structures of this lifeline corridor segment of the BART system that provides safe passage from West Oakland Station into the Oakland Wye subway, for emergency evacuation if necessary during an earthquake. This segment in particular requires strengthening, because the aerial structures are founded on spread footings over weak soil that is prone to failure during earthquakes. This project element is listed in Track One on the basis of a pending Section 5307 grant programming request.

Track Two Projects

The remainder of the Seismic Retrofit Program (a portion of *Segment I* and *Segments II-V*) is currently listed in Track Two. This portion of the program will be defined more explicitly to reflect the results of a seismic safety study.

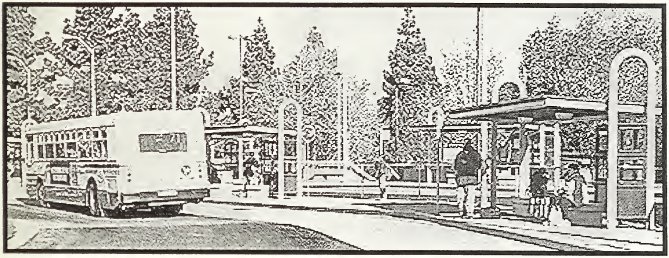
SERVICE IMPROVEMENTS PROGRAM

The purpose of this program of projects is to improve passenger services and system capacity at BART stations and shops by expanding maintenance facility capacity, building intermodal transit centers, bicycle facilities, and other passenger service, system capacity, and station area improvements. Of the 40 Track One projects listed in this program, 7 are completed and 22 are underway. For some station area development projects, BART is or may be the official sponsor. Additional station area development projects for which BART is working with local and regional jurisdictions, but is not the official sponsor, are listed in the section of this chapter titled *Locally-Sponsored Station Area Development*.

Projects Completed

Hayward, Bay Fair, Concord, Walnut Creek, El Cerrito Plaza, Richmond and Daly City Transit Centers

All of these projects are now operational. They improve traffic circulation in the vicinity of the stations, and improve the passenger experience by providing upgraded bus waiting and loading areas, weather protection and other amenities. The Pittsburg Park and Ride Lot project is also completed. The following is a photograph of the Richmond Station intermodal facility bus bays.



Anti-Graffiti/Vandalism Program

This program utilized increased public awareness, plainclothes police enforcement, CCTV-VCR surveillance systems, and inter-agency cooperation to combat graffiti and vandalism systemwide.

Maintenance Facilities Upgrade and Expansion

During the 1980s, BART augmented its operating fleet, adding 230 cars to rail service. In addition, BART has increased the demands on its trains over the past several years by reducing headways and increasing car miles. The increased size of and demands on the operating fleet requires that BART's heavy maintenance facilities be reconfigured, renovated and expanded in order to increase shop efficiency to a level adequate enough to properly maintain the expanded fleet. This expansion is also essential to reduce the amount of time cars are held out of service for maintenance and repairs. This year, analysis of BART's maintenance facilities determined that a shortage of work spaces is the primary reason for long queues of BART cars awaiting maintenance or repair. As a result, BART has refined its maintenance facility upgrade and expansion program into a set of discrete projects, as follows.

Projects Underway

Concord Shop Expansion

The first project to be implemented in this program is the Concord Shop Expansion. This project will convert two "flats" by installing in-floor vehicle lifts to provide under car access and will modify the tracks at the facility to facilitate vehicle triage and access to work spaces. In addition, four new lift-equipped work spaces will be added in an expanded building. Modifications of parts storage and other ancillary shop features will be made concurrently.

Hayward Shop Track Improvements

This project will add track segments behind the main shop to facilitate the sorting of cars selected for service. An additional track segment between the shop and yard will improve shop effectiveness by providing separate incoming and outgoing connectors, facilitating release and intake of cars.

Hayward Component Repair

This project will extend the front of the shop building two floors, providing a 10,000 square foot expansion of the component repair shops that rebuild electrical and mechanical sub-systems.

Daly City Transit Vehicle Washer Facility

This project will provide a new transit vehicle washer to service the fleet maintained at this West Bay maintenance facility.

Track One Future Projects

Hayward Shop Lifts

This project will install vehicle lifts on four existing flats in the main shop, increasing service capacity by approximately 50%.

Richmond Shop Lifts

This project will convert two "flats," equipping the work spaces with vehicle lifts to facilitate the removal of large under-car components.

Studies and Plans

Track One Future Projects

AFC Renovation and Expansion Study

This study, anticipated to get underway early in FY 2000, will assess BART's fare collection capacity after the completion of the AFC/Translink project, analyze the sufficiency of BART's fare collection equipment to address the fare collection needs of the District, and evaluate the necessity and cost of expanding BART's existing fare collection system.

Service Improvements Study

This study will review the capacity of the existing system to meet the transit needs of BART passengers. Given recent rising ridership and the increasing demands on the system to carry more passengers longer distances, this study will assess the capacity enhancement needs of the BART system.

Thirty Year Capital Plan

BART's *Capital Improvement Program* only plans for ten years of capital requirements. However, much of BART's physical infrastructure has a useful life of twenty years or longer. This plan, when completed, will focus on BART's long range capital objectives and financial needs over thirty years and will feed into the MTC's regional, long-term planning document, the *Blueprint for the 21st Century*. The *Thirty Year Capital Plan*, anticipated to commence early in FY 2000, will be funded with operating funds.

Station Access and Station Area Development

BART staff is working with various communities and private developers to facilitate the creation of transit-oriented development at certain stations. Such development is intended to improve pedestrian access to stations and provide services, jobs, and housing within easy walking distance of stations. Such development would attract more passengers to BART, including off-peak riders and reverse commuters.

Projects Currently Underway

Additional Transit Centers

BART and AC Transit have entered into a Memorandum of Understanding in which AC Transit will pass federal Section 5307 funds through to BART to fund construction of transit centers at Fremont, Union City, South Hayward, Coliseum/Oakland Airport, Fruitvale, and West Oakland Stations.

Fruitvale Transit Village (Childcare Facility, Pedestrian Plaza, and Parking Structure)

BART is working with the Fruitvale Development Corporation (FDC) of the Spanish Speaking Unity Council on three components of the proposed Fruitvale Transit Village: a pedestrian plaza, a childcare facility, and a parking structure necessary to free up land for the Transit Village development. The plaza will consist of a 20-25,000 square foot public, landscaped "paseo" located on the east side of the station. It will provide a pedestrian corridor between the station and both the Fruitvale residential community and International Boulevard, which is lined with storefronts and has a great deal of pedestrian activity. Surrounding the plaza site, the FDC will construct a transit-oriented project that will feature housing, offices, retail, and community facilities and services, including the childcare facility, a community resource center, a medical clinic, and a senior center. The childcare facility will accommodate approximately 200 children and will enhance and encourage the use of public transit at the Fruitvale Station by providing a service to passengers of both BART and AC Transit. In order to free up land to accommodate the Transit Village, a parking structure and additional surface spaces will be constructed on the west side of the station. Together, they will provide enough parking to replace the surface spaces that will be lost when the Transit Village is developed on the east side. As a whole, the Transit Village will visually enhance the Fruitvale Station; provide transit-accessible jobs, services, and housing; and improve pedestrian access to BART and AC Transit.

16th Street/Mission Plaza Project

The two plazas above the 16th Street/Mission station function as entryways to the station and as important transfer centers for passengers connecting between BART and Muni. Over the years, however, the plazas have become a source of neighborhood concern over such issues as safety, aesthetics and public amenities. In response to this concern, BART and the Metropolitan Transportation Commission (MTC) have sponsored a series of community workshops focused on the two 16th Street/Mission plazas and led by the Mission Housing Development Corporation (MHDC), a non-profit developer of affordable housing. The product of these workshops is the 16th Street BART Community Design Plan, which establishes a blueprint for creating a safer and more active and vibrant public space at the 16th Street/Mission Station. The first phase of implementation of the plan has been funded and will focus on the reconstruction of the southwest plaza. This project will improve the safety and usability of the plaza through enhancements such as lighting, paving, landscaping, benches, and the removal of current barriers to pedestrian circulation and visibility. Partners in the implementation phase of the project include the San Francisco County Transportation Authority and MHDC. This project will also include new amenities for transit passengers, such as new and enlarged bus shelters and escalator covers to improve reliability.

Concord Access and Station Area Improvements

In 1998, MTC, the City of Concord, BART, and JFK University engaged in a planning study focused on improving pedestrian access to the station, as well as the pedestrian connection between the Concord BART Station and both a proposed JFK University campus and downtown Concord. The first phase of implementation of the plan has been funded by MTC and the City. The project will extend the City's downtown streetscapes to BART's entry and will implement other design improvements that will facilitate pedestrian access to BART and to downtown Concord. If funded, a later phase would construct the improvements to facilitate pedestrian access to the proposed JFK University campus.

Track One Future Projects

Bike Program

This project would improve bike access to BART by providing day-use bike lockers and other bicycle parking facilities at BART stations.

El Cerrito Plaza Access and Station Area Improvement

Contra Costa County Measure C provides $5.5 million in funding for BART passenger parking expansion at the El Cerrito Plaza Station. BART and the City are currently cooperating to determine the exact nature of this project. The scope, cost and schedule of this project will be finalized upon completion of that effort.

BART-SFO Extension Bicycle Trail and Other San Mateo County Improvements

In 1996 BART and SamTrans agreed to share the responsibility for construction of a bicycle trail along the BART-SFO Extension alignment. Understanding that it may not be possible to construct a trail contiguous with the alignment right-of-way, a study was launched earlier this year to evaluate alignment alternatives and overall project costs. SamTrans is funding the study. Upon completion of the study, the project will undergo preliminary engineering, environmental clearances, design and then construction. The trail is targeted to open at the same time as the BART-SFO Extension begins revenue service in late 2001.

Other improvements in San Mateo County are currently under development.

Dublin/Pleasanton Station Parking Expansion

This project would expand the existing parking lot at the Dublin/Pleasanton Station by adding 900 parking spaces. To complete this project, the District will acquire, clear and pave land for a surface parking lot.

Pittsburg/Bay Point Station Parking Expansion

This project would expand the existing parking lot at the Pittsburg/Bay Point Station by adding approximately 500 parking spaces. To complete this project, the District will acquire, grade and pave land for a surface parking lot.

Track Two Projects

Lafayette Access and Station Area Improvements

During the past few years, the City of Lafayette has worked with developers on plans for the Lafayette Town Center, a $30 million transit village project just south of the Lafayette BART Station that will include retail, 75 apartments and an office building. The new development will be entirely accessible to persons with disabilities, and the City will require the developer to provide facilities beyond those required by current law, including elevator access to each floor of the apartment units and "chirping" pedestrian signals. However, the southern entry to the Lafayette BART station is not accessible to people with disabilities. The proposed access project, to be sponsored by the City in partnership with BART, calls for the construction of a wheelchair-accessible ramp and a pathway leading from the south side of the BART station to the Town Center. Within the Town Center, a wheelchair-accessible walkway will provide a public right-of-way leading to Mt. Diablo Boulevard, Lafayette's main commercial thoroughfare.

Bayfair Access and Station Area Improvements

Alameda County, in concert with the City of San Leandro and BART, is seeking funds to improve the pedestrian and vehicular connection between the Bayfair Shopping Mall, a proposed cineplex, the Bayfair BART Station, and East 14th Street. The County, the City of San Leandro, and BART, together with the Mall management, have already participated in a preliminary design study that resulted in the development of cost estimates for the project.

Ashby/Ed Roberts Campus Project

BART and the City of Berkeley have executed a Memorandum of Understanding to provide development at the Ashby Station. The City subsequently transferred its control of air rights at the station to the Ed Roberts Campus (ERC), a consortium of nine organizations serving people with disabilities. The ERC will be conducting a conceptual design study for a proposed center that would consolidate services for people with disabilities at the Ashby BART Station. Partners in the project include BART and the City. The ERC, BART, and the City are negotiating a property exchange to enable the project to move forward.

24th Street/Mission Plaza Project

Like the plazas at the 16th Street/Mission station, the two plazas above the 24th Street/Mission station function as gateways to the station and as major transfer centers for passengers connecting between BART and Muni. Over the years, however, the plazas have become a source of community concern over such issues as security, aesthetics, and public amenity. BART, in partnership with the MTC, the SFCTA and the Mission Economic Development Association (MEDA), is focusing on the development of a design plan for the plazas at the 24th Street/Mission station. In addition to addressing concerns raised by the community, this plan will ensure that common elements on the plazas of both the 16th Street/Mission and 24th Street/Mission BART stations are developed in a consistent manner, helping to establish a strong identity for the Mission Street corridor, and reducing overall design costs.

Balboa Park Access and Station Area Improvements

The San Francisco Department of City Planning has identified various transit corridors throughout the City as candidates for the development of infill housing. Most of these are along Muni light rail lines or the BART line. Recently, the Planning Department has focused its attention on the area around the Balboa Park BART station because it has great potential for new development given the amount of developable land in the area owned by public agencies (Muni, City College, the Department of Public Works, and BART). The San Francisco Planning Department will be working with these agencies and BART on a study focused on strategies to encourage the development of infill, transit-oriented housing and to improve pedestrian access to the BART station and Muni light rail stops.

San Leandro Access and Station Area Improvements

The City of San Leandro is working with BART on a planning study focused on improving the pedestrian connection between the BART station and Downtown San Leandro, and on shifting the BART parking from the east to the west side of the station in order to allow housing to be built on BART property east of San Leandro Boulevard.

West Oakland Access and Station Area Improvements

The area surrounding the West Oakland BART station has been the focus of much recent activity related to the provision of housing and transit access improvements. The Oakland Housing Authority (OHA) has prepared an application for funding from the US Department of Housing and Urban Development (HUD) to rebuild the Westwood housing development, which is across the street from the West Oakland BART Station, into an expanded mixed-use/mixed-income development with private partnership. Also, a City-funded study of sites for the Mandela Transit Village has been completed recently, and the City will be studying strategies for revitalizing the 7th Street commercial corridor next to the station. Finally, BART is looking at strategies for improving access and attracting development, including the opportunities afforded by the recent availability of Union Pacific's railroad property. Before any development or access improvements can proceed, a number of planning activities would first need to be undertaken to ensure community support for any improvements and to assess the costs and financial feasibility of various improvements. BART, OHA and the City of Oakland Community and Economic Development Administration have therefore developed a scope of work for a planning study focused on the West Oakland BART Station and surrounding area.

Oakland Coliseum Access and Station Area Improvements

This project would create a multi-modal transportation hub to facilitate transfers and pedestrian access for users of BART, AC Transit, the current AirBART shuttle bus service to the airport, the proposed BART/Oakland Airport Connector, the planned Capitol Corridor rail service, the Oakland Coliseum Complex, and the surrounding commercial and residential developments. It would include improvements to the pedestrian bridge which links BART, the Coliseum, and the planned Capitol Corridor rail stop; increased pedestrian access to the BART station; bus intermodal improvements; more efficient passenger circulation on escalators and platforms; and security improvements. Possible partners in this project include the City of Oakland Community and Economic Development Administration, AC Transit, the Capitol Corridor Joint Powers Authority and its Citizens Advisory Committee, the Port of Oakland, the Elmhurst Property Owners Association, the Elmhurst Business Association, the Webster Housing development and the Coliseum Commerce Association.

Other Access and Station Area Improvement Projects

BART has proposed access improvement projects focused on the Rockridge and Union City stations.

Locally-Sponsored Station Area Development

For the following projects, BART staff is working with local and regional jurisdictions to facilitate station area development. Station area development projects for which BART is or may be the official sponsor are listed in the *Station Access and Station Area Development* section of this chapter. BART is not the official sponsor of any of the following projects.

Richmond Access and Station Area Improvements

Funded by MTC and the State Transportation Improvement Program, this project will focus on enhancing pedestrian access to the station, as well as connecting the Richmond BART Station to both the planned Richmond Transit Village and Downtown. In its proposed location adjacent to the BART Station, the Richmond Transit Village will be a compact, mixed-use development covering 16 acres that includes housing, retail, offices, and a regional performing arts center.

MacArthur Station Area Improvements

A development company has requested exclusive negotiating rights from BART to expand the nearby Surgery Center over BART's parking lot. The Citizens' Planning Committee is reviewing the development proposal.

Other Station Area Development Projects

In addition to the station area improvement projects listed above, BART staff are currently working with local jurisdictions on various station area planning and joint development projects. At the Pleasant Hill station, BART and Contra Costa County are implementing a community site planning study to generate and assess preferred development scenarios. BART is also working with communities to create specific plans for transit-oriented development at the Pittsburg/Bay Point station and the planned Millbrae station. At the El

Cerrito Del Norte Station, BART has selected a developer for a project that is expected to include housing and retail. Finally, at the Hayward Station, the City and BART have negotiated a land swap to facilitate the construction of housing as a supplement to previous station area development.

Additional Capacity Enhancement

Individual projects listed in this CIP are intended to accommodate anticipated passenger growth. This subprogram would go well beyond the basic program to accommodate substantial growth. This subprogram is conceptual and still under development, but could include additional transit vehicles, traction power and train control upgrades, reliability improvements, station circulation and access improvements and maintenance facilities expansion. The cost listed for this subprogram is a preliminary estimate.

RESEARCH, DEVELOPMENT & DEMONSTRATION

Projects Currently Underway

"CarLink" Station Cars

BART has been developing the station car concept for seven years. Station cars are automobiles that are used by several BART riders per day to give them access and egress to and from stations. Initially the focus was on electric vehicle technology. BART conducted a two and a half year program using forty electric vehicles imported from PIVCO (Personal Independent Vehicle Company) of Norway. A major conclusion of the program was that the sharing of cars was as environmentally important as the vehicle technology. "CarLink," a new car sharing/station car program, was launched in February 1999 at BART's Dublin/Pleasanton Station using twelve compressed natural gas cars from Honda. Soon BART will have station car services provided by rental car companies, using gasoline cars. One BART customer will drive the car from home to the station. Another BART customer will drive the car from the station to the work site. At the work site the car will be used as a corporate pool car. With revenue coming in from each of the several daily users, the station car market would become a major new opportunity for the rental car industry, as well as a mode for enhanced access to transit.

Superconducting Magnetic Energy Storage (SMES)

Two related projects are studying the technical and economic feasibility of utilizing SMES technology to minimize voltage sag problems in critical locations in the system. Addressing the voltage sag problem is critical to plans to operate trains with tighter headways to support projected future service levels. Multiple approaches are being pursued. A Federal Transit Administration (FTA) grant is currently funding a study to evaluate the feasibility of applying SMES to the BART system. Other possible approaches being considered for investigation include cryogenic power converters to control voltage output of existing substations and high temperature superconducting materials.

Chapter Four: The Context

FUNDING STRATEGY

INTRODUCTION

BART's *Capital Improvement Program* (CIP) includes all of the projects that the District would implement if adequate funding were available. The entire program totals $7.941 billion. Of this total, the Track One program, at a cost of $4.970 billion, is comprised of those projects for which potential sources of funding can be identified. The $2.971 billion balance of the program, Track Two, serves as the basis of advocacy and planning for increased levels of capital funding.

The following sections provide a snapshot of BART's funding picture. Each section pays particular attention to the specific funding plans of those projects that are significant in size, as well as describing the overall funding sources for each program. A summary of BART's Track One funding needs is provided in *Table 1*. A summary of the proposed funding sources for BART's Track One projects is provided in *Table 2*. *Table 3* lists the District's Track Two Systemwide Renovation, Service Improvement and Seismic Retrofit projects by tier. When additional funding becomes available for such Track Two projects, projects will be selected on the basis of their tier and their funding eligibility. Further funding need detail on all Track One and Track Two projects is outlined in *Chapter Five*.

SYSTEMWIDE RENOVATION PROGRAM

Track One is divided into two phases. Phase 1 is composed of those projects included in the District's original $1.1 billion renovation program, as outlined in Fiscal Year 1993. Phase 2 is composed of those projects outside of the original renovation program for which potential funding opportunities have arisen in large part due to the passage of the Federal Transportation Equity Act for the 21st Century (TEA-21) and to BART's projections of outyear federal grant funding. Most of these projects were listed in Track Two before such potential funding opportunities were identified by BART. The opportunity to advance these projects is driven by additional available grant funding in the region and the different funding criteria utilized for each grant program to award such funding to projects.

Progress in Renovation

For 20 years after the inception of rail service in 1972, BART was considered new and state-of-the-art. Reliability improved steadily even as service levels increased. By the early 1990's, however, the effects of aging began to surface. It is now apparent that BART stations, rail cars and the basic system infrastructure require more than just routine maintenance to continue operating reliably at increasingly higher levels of service. In 1993, BART evaluated the condition of the physical plant and developed a $1.1 billion initial phase program of renovation projects needed to return the system to near-original design standards. This systemwide renovation program is necessary to preserve BART as a critical transit mode in the Bay Area.

In 1994, as the magnitude of the program became known, BART and the Metropolitan Transportation Commission (MTC) began discussions on how to fund this initial program of critical renovation needs, resulting in the joint adoption of MTC Resolution 2672. The CIP that BART adopted in January 1995 outlined a set of projects and a funding strategy to implement a multi-year program to rebuild the system. Resolution 2672, which outlined a base level of grant programming and a series of planned BART bond issues over several years, formed the foundation of the program at a $650 million funding level. Other grants, BART funds and BART bond issues are anticipated to fund the remainder of the need.

Much of the funding for the renovation program has been secured and a sound financial plan to bring the rest of the program to fruition has been developed. Developments in the financial plan since publication of the last *Capital Improvement Program* are significant. The $650 million grant funding commitment in MTC's Resolution 2672 has been solidified with the programming of federal Section 5307, Section 5309 Fixed Guideway and formula funds between Fiscal Years 1997 and 2004. BART's obligation to internally generate $200 million in supplemental funding was achieved in March 1998 with the sale of a second bond issue (the first was in 1995) dedicated primarily to system renovation. Outside of the Resolution 2672 framework, BART and its funding partners secured additional grant commitments totaling $24 million for the Automatic Fare Collection Equipment/Translink Implementation project during FY 1999.

Remaining Challenges in Renovation

The remaining financial challenges include the need for BART and MTC to secure the grants now programmed in support of Resolution 2672. BART will issue a third series of sales tax revenue bonds that will contribute another $142 million to the overall $1.572 billion renovation program. BART also plans to generate a total of $108.7 million in operating funds for direct allocation to the capital program during the period Fiscal Years 2000 through 2010, in addition to the $49.4 million already generated between FY 1997 and FY 1999.

Generation of Grant Funds

In May 1994, BART and MTC jointly adopted MTC Resolution 2672, a cooperative funding agreement designed to address BART's most critical renovation needs. The agreement calls for MTC to program $450 million in federal, state, and regional funds for BART renovation, and for BART to generate $200 million as local match to the proposed grant funds.

The grant funding plan originally set forth in Resolution 2672 anticipated MTC programming its entire $450 million commitment over the six-year period FY 1994 through FY 2000. Subsequent reductions in Congressional appropriations of transit system funding led MTC to extend its forecast of funds expected to be available to the Bay Area region, and therefore to BART, over the period of this CIP. With the passage of TEA-21, Congress authorized additional funds to be allocated to the San Francisco Bay Area through the Federal Formula Program. With the infusion of these funds to the region, MTC currently projects that it will complete the remainder of its Resolution 2672 commitment to BART by 2004.

Since the adoption of Resolution 2672, BART and MTC have continued to jointly pursue additional grant funding for the balance of the renovation program above the $650 million outlined in Resolution 2672. As the financial program has evolved, grant sources will make up more than the $450 million identified in Resolution 2672. The majority of these additional funds will be programmed between FY 2005 and FY 2010 from both federal formula and flexible fund sources.

Generation of BART Funds

The CIP adopted in January 1995 (FY 1996-2005) outlined the need for BART to issue bonds to match and supplement grants for the Systemwide Renovation Program. That CIP proposed bond issues for the springs of 1995, 1997, 1998 and 1999 to generate a total of approximately $400 million. The source of debt service funds for this planned borrowing was proposed as a series of fare increases in 1995, 1996 and 1997 to fund the first $200 million with bonds. Future revenue enhancement and/or cost reductions funded the last $200 million. Three fare increases have been implemented as planned. BART has now more than met its Resolution 2672 match commitment.

The first bond issue was sold in May 1995, netting $130 million. The second bond issue was not needed as early as forecast in the 1995 CIP, and was sold in March 1998, combining the planned 1997 and 1998 issues. This produced $218 million for capital projects, of which $130 million was used for renovation. In combination, therefore, BART has generated $260 million for renovation, exceeding the required commitment under Resolution 2672 by $60 million. The last of the bond issues outlined in BART's *FY 1995 Capital Improvement Program* is required to complete the A/B Car Renovation Program and is currently expected to be issued during FY 2000 to generate approximately $142 million of bond proceeds, based on current interest rates.

Financial projections carried in the companion document Short Range Transit Plan (SRTP) indicate that the combined debt service for all of the bond issues can be sustained with the revenue produced by the series of three fare increases already implemented.

In addition to the bond issues, the funding program has for several years included direct allocations from the operating budget to the capital program. Between FY 1997 and FY 1999, $49.4 million was allocated from the operating to the capital budget. The Fiscal Year 2000 Short Range Transit Plan forecasts operating allocations of $108.7 million to the capital plan over the period from FY 2000 to FY 2010, bringing the total program of allocations from the operating plan to $158.1 million between FY 1996 and FY 2010.

Funding Strategies by Program

As noted above, BART has defined a program of essential renovation requiring $1.572 billion between inception of the program adopted in 1995 and the end of this CIP timeframe (FY 2010). The proposed funding sources are summarized in *Table 2*. Details for several major elements of the program are described in the following section.

A- and B-Car Renovation Program

The largest single component of the systemwide renovation program is the rebuilding of the original fleet of A- and B-cars to extend their useful lives. The budget for this effort is $454.4 million. The funding program jointly adopted by BART and MTC for this project includes the programming of $239.5 million in federal Section 5309 Fixed Guideway funds, $30 million in federal STP and CMAQ funds, almost $17 million in state Proposition 108 and TCI funds, and $24 million in bridge toll funds. The funding plan requires BART to provide the balance of the funding, or approximately $144 million. To date, BART has committed $8.3 million. The rest of BART's commitment will come from the Fiscal Year 2000 sales tax revenue bond issue and BART reserves.

The funding plan for this project is covered by a Federal Transit Administration (FTA) Letter of No Prejudice (LONP), which permitted BART to execute a contract for performance of renovation work in advance of actual receipt of most of the grant funds. The contract is comprised of a base order for renovation of the first 200 cars, fully covered by the LONP. BART has also contracted for the remaining 239 cars with annual cancellation clauses in the event that funding is not available.

Automatic Fare Collection Equipment Modernization / Translink Implementation

After 25 years in service, BART's automatic fare collection equipment must be modernized through a combination of replacement and renovation. In conjunction with MTC, BART has developed a financial plan to fully fund this project, currently estimated to cost $77.776 million. As part of MTC's Resolution 2672 commitment, $21.259 million in federal Section 5307 funds are programmed to be granted to the project by the end of FY 1999. In addition, MTC programmed an additional $24 million of federal Section 5309FG funds for the project in FY 1999. Also this year, the Alameda County and Contra Costa County Congestion Management Authorities programmed an additional $4.5 million of STIP and STP/CMAQ funds for the project, contingent upon San Francisco Transportation Authority's programming of $1.5 million in FY 2000. BART is seeking additional grant funds, including State Transportation Improvement Program (STIP) and federal STP funds over the next several years. BART revenues will be required to provide local match and supplemental funding to grants.

Rail Replacement

As train wheels grind against rail, especially on curves, the rail gradually wears away and must be replaced. In addition to the $10.9 million already programmed between FY 1996 and FY 1999, MTC programming under Resolution 2672 includes annual increments totaling $18.7 million in Section 5307 by FY 2004. The CIP also projects the receipt of Section 5307 grant funds between FY 2007 and FY 2010 in the total amount of $12.75 million. BART will be required to provide local match and possible supplemental funding to these periodic grants. Local match could come in the form of bridge tolls programmed by MTC.

Midlife Overhaul of C-1 Cars

The overhaul of C-1 vehicles at the mid-span of their design life will reduce future maintenance costs and greatly improve the reliability and comfort of the cars, encouraging additional BART ridership. BART currently has programmed approximately $15 million of allocations from the operating to the capital budget between FY 1999 and FY 2000 to fund this project. Additional funding may be sought in the region or within BART for supplementary midlife renovation of these cars.

Traction Power System Renovation

Traction power is the electricity that operates the motors that propel BART trains. The traction power system includes rectifiers, circuit breakers, cabling, and other components that have deteriorated with use and the passage of 25 years of service. This deterioration poses risks to reliable service delivery. BART has already allocated $11 million in bond and other BART funds in FY 1998 and FY 1999 to begin this major project. MTC programming under Resolution 2672 and transit capital priorities includes a total of $36.4 million in Section 5307 and Section 5309FG funds over the period of FY 2000 through FY 2004 to continue the project. Additional Section 5309FG funds in the amount of $27 million are projected for this project between FY 2007 and FY 2010. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these periodic grants.

Wayside Train Control System Renovation

The electronic components and circuitry that control the speed and switching of trains was state-of-the-art when the system opened for service. But many of these critical parts are now worn, unreliable, obsolete and very costly to maintain. This project will replace components and subsystems as necessary to keep BART train control safe and reliable. BART has already allocated $4.802 million of bond funds to initiate the project. MTC programming under Resolution 2672 included $4 million of federal Section 5307 grant funds in FY 1999 and a total of $33.4 million of Section 5307 funds over the period FY 2000 through FY 2004. Additional Section 5307 funds in the amount of $22.1 million are being sought for FY 2007 through FY 2010 to continue funding this project. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these periodic grants.

Advanced Automatic Train Control

This project is integral to BART's proposed future service plans, and also will reduce the need for a significant amount of renovation that would have been required on the existing train control system. The research and development phase is being carried out with a combination of federal defense conversion funds, matched by private sector and BART funds. Grant funding in the amount of $47.1 million for implementation of AATC on the M- and upper A-lines has been programmed by MTC from state and federal sources. BART has generated the local match to this grant.

Additional funding for future phases of AATC, including the development and implementation of complementary technology, central computer software development and implementation of AATC on the remainder of the core system, are planned to be funded with federal Section 5307 and Section 5309FG funds. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these grants.

Escalator and Elevator Program

Replacement of many of the most critical station escalators, and complete renovation of other escalators and station elevators systemwide are among BART's highest priority renovation programs. These programs, totaling over $50 million, have not competed well for grant funds in the past, so these efforts are expected to be carried out primarily with BART revenues. Grant sources will continue to be pursued as possible. However, these projects must be carried out immediately and are being funded from BART sources as necessary to keep them progressing.

Other Track One Systemwide Renovation Projects

Renovation of the remainder of the BART infrastructure (stations, power and train control systems, maintenance facilities, etc.) is being accomplished through a variety of funding sources. Through Resolution 2672, MTC has pledged to program $140 million, to be matched by $56.6 million from BART. BART's $56.6 million match is being provided from the proceeds of the 1995 bond sale. Other grant sources and BART revenues are programmed for the remaining balance.

Track Two Systemwide Renovation Projects

Additional renovation funding needs beyond what is reasonably forecast to become available are also presented in this CIP, at a conceptual planning level. The Track Two renovation program comprises projects that would be highly desirable to accomplish within the next ten to fifteen years, but that are not at this time considered essential to reliable operation of future service levels. The Track Two renovation program is estimated at $2.305 billion, including a comprehensive renovation of BART's C-1 cars and additional mainline, station, controls & communication and facility renovation.

EXTENSIONS PROGRAM

From the earliest days of its planning, the BART system has been envisioned by many as an expansive network of lines which ultimately would link most of the counties in the greater San Francisco Bay Area region. Limitations on funding restricted the original construction to 71.5 miles of double track in San Francisco, Alameda, and Contra Costa counties. BART did not lose sight of plans for extension of the original system.

In the mid-1980's several Bay Area counties began to explore the possibility of funding various transportation improvements, including BART extensions, through increases in voter-approved sales taxes. BART was granted significant funding from sales taxes in Alameda and Contra Costa counties, and from state and other sources, for extensions in those two counties. In Contra Costa County, an extension from the former end of the line at Concord now continues to new stations at North Concord-Martinez and Pittsburg/Bay Point. In Alameda County, the new branch line from Bay Fair Station to Castro Valley and Dublin/Pleasanton was built. Federal grants, state grants, and San Mateo County Transit District funds were simultaneously secured for an extension to Colma Station in San Mateo Country. All of these projects have entered service in the last three years.

BART-SFO Extension

This extension of the BART rail system is from the new Colma Station to San Francisco International Airport and the city of Millbrae. It will include four stations at the following locations: Hickey Boulevard in South San Francisco, Tanforan Park Shopping Center in San Bruno, Millbrae Avenue in Millbrae, and at the new San Francisco Airport International Terminal. In addition to mainline services to Millbrae and SFO, BART trains will be dedicated to shuttle service between the Millbrae and SFO stations. The intermodal Millbrae station itself will include a cross-platform connection with Caltrain.

A Full Funding Grant Agreement with the Federal Transit Administration was secured for this project in June 1997. The funding plan for this project includes $750 million in federal Section 5309 New Rail Starts funds, $152 million in State funds, $26.5 million in Bay Area bridge tolls from MTC, $200 million from the Airport, $171 million from SamTrans, $2 million from the San Mateo County Flood Control District, $141.7 million from BART funds and up to $70 million FFGA scope substitution. Included in the $1.5132 billion budget is a $79.2 million Capital Reserve Account to be funded with a combination of direct allocations from the operating budget and a series of two bond issues, currently anticipated to occur in Fiscal Years 2000 and 2002.

Warm Springs/Santa Clara Phase I Extension

This planned $546 million extension, as reflected in this CIP, would extend from the current end of line at Fremont Station to two new stations at Irvington and Warm Springs in southern Alameda County. This project is listed partially in the Track One program in the amount of $185.8 million based on existing regional funding commitments from a variety of sources. The $360.3 million balance of the project cost is listed in Track Two pending identification of additional funding sources.

Oakland Airport Connector

This planned $129.9 million extension would extend in an aerial alignment from the existing Oakland Airport-Coliseum Station to the Oakland Airport in Alameda County. This project is listed partially in the Track One program in the amount of $4 million to be funded from the 1998 State Transportation Improvement Program for preliminary engineering and environmental work. The $125.9 balance of the project cost is listed in Track Two pending identification of additional funding sources.

West Dublin/Pleasanton Station

This planned $39.4 million project would build the third station originally planned for the Castro Valley-Dublin-Pleasanton Extension in Alameda County. This project is listed in the Track Two program. A negotiated procurement process is currently being implemented to identify and analyze potential funding mechanisms, including possible real estate development opportunities for the construction of the station.

Pittsburg-Railroad Avenue Station

This planned $200 million project would extend the new Pittsburg/Bay Point segment further east in Contra Costa County, to a new station at Railroad Avenue. A portion of this project is listed in the Track One program on the basis of remaining funds from Contra Costa County's transportation sales tax, along with other funding sources. BART will continue to seek funding for the balance of the project, which continues to be listed in Track Two.

SEISMIC RETROFIT PROGRAM

The original BART system was built in the late 1960's to standards far in excess of building codes of that time. BART survived the major Loma Prieta earthquake of 1989 with only very minor damage, and returned to full service in a matter of hours. Since the 1960's much has been learned about how large structures such as BART facilities perform in major seismic events. Upgrades are now known to be technically feasible that would allow the system to withstand major earthquakes in the immediate vicinity of BART structures with the ability to resume service in a minimum amount of time.

At this time, the bulk of the $795 million Seismic Retrofit Program is listed in Track Two pending identification of funding sources. A first increment in the amount of $197.5 million is listed in Track One. Caltrans is currently funding a study to evaluate the project scope and cost for *Segment I: Caltrans Local Seismic Retrofit Program*. $170 million is an estimate of the cost to retrofit portions of the BART system that cross over local streets and roads. BART has allocated $1.2 million to commence design work on this project. The remaining $24.7 million is being sought from Section 5307 grant funds.

The District is continuing to review and pursue funding options for the $597.5 million Track Two portion of the Seismic Retrofit Program. Potential funding options include Federal and State grant funds, general obligation bonds, sales tax revenue bonds and other financing mechanisms.

SERVICE IMPROVEMENT PROGRAM

BART's commitment to the needs of its passengers and of Bay Area communities shapes a meaningful Service Improvement Program. Through this program, BART works with its funding and community partners to better serve the transit needs of the Bay Area. BART serves its customers and local communities by facilitating intermodal connections and station access, by fostering transit-oriented development and by implementing the upgrades and improvements necessary to sustain BART's service standards in the face of increasing capacity.

One way in which BART and other transit improve regional transit service is by providing intermodal transit connections and facilities that promote non-automobile access to transit. BART and AC Transit have entered into a Memorandum of Understanding the terms of which allow AC Transit to pass through to BART federal funds and local match for construction of intermodal transit center improvements at eight stations. Last year, the Bay Area Air Quality Management District provided funds for a $704,000 program to improve the quality of bicycle access to BART stations. Additional Air District grant funds will be pursued to expand opportunities for bicycle access to the system. A combination of BART and grant funds are supporting prototype development and initial deployment of a "Pathfinder" sign program to help patrons find their way between stations and nearby facilities.

In addition to these intermodal and access projects, BART is a partner in three Track One station area improvement projects intended to enhance pedestrian access through transit-oriented development and other physical enhancements. The Fruitvale Transit Village project will include a childcare facility funded with $2.3 million from FTA's Livable Communities Initiative and $575,000 provided by the Spanish Speaking Unity Council (SSUC), a non-profit community-based organization that is BART's partner in the Fruitvale Transit Village. The other components of the project directly involving BART are the Pedestrian Plaza and the Replacement Parking. The Pedestrian Plaza is funded with $780,000 in Federal Transportation Enhancement Activities funds and $450,000 worth of in-kind contributions in the form of land and staff time from BART. The Replacement Parking is funded with $7.65 million from the State Transportation Improvement Program (STIP) and $800,000 provided by the SSUC. Also, the SSUC has acquired another $10.8 million for different components of the Transit Village from HUD, the EPA, the US Department of Commerce, and the City of Oakland, in addition to $21.6 million in privately-raised funds.

Other Track One station area improvement projects are the 16th Street/Mission Plaza Project and the Concord BART Streetscape and Pedestrian Access Improvements Project. These are funded primarily from the Metropolitan Transportation Commission's Transportation for Livable Communities (TLC) Program, which provides funding for community-oriented transportation projects throughout the nine-county Bay Area. The 16th Street/Mission Plaza Project is funded with $1.7 million from MTC, $130,000 from BART, and $130,000 from the San Francisco County Transportation Authority. The Concord BART Streetscape and Pedestrian Access Improvements Project is funded with $500,000 from TLC and additional funds from the City of Concord.

Funds are programmed to implement maintenance facilities upgrade and expansion in the amount of $52 million. These improvements are necessary to enable BART to meet escalating capacity requirements.

In 1996 BART and SamTrans agreed to share the responsibility for construction of a bicycle trail along the BART-SFO Extension alignment. A study was launched earlier this year to evaluate overall project costs. SamTrans is funding the study. BART and SamTrans have each committed up to $1 million for construction. Costs, if any, beyond $2 million are the responsibility of SamTrans. The San Mateo County Congestion Management Agency has committed to allocating $2 million of STIP funds to BART for improvements within San Mateo County. The STIP funds will likely be used to fund BART's portion of the bike trail costs, as well as other improvements in San Mateo County that are currently under development.

In addition to these Track One Service Improvement projects, the CIP also includes several proposed Track Two projects, including further deployment of the Pathfinder sign program, possible station area improvements at various stations, traction power system upgrades and other projects that could significantly improve BART operations and/or expand BART capacity.

For the Track Two station area development projects (e.g., West Dublin, Oakland Coliseum, West Oakland and Balboa Park), there are three major grant funding sources that can be used to support these projects. For Fiscal Year 1999, the TLC Program provides $365,000 for community-based planning and technical assistance in addition to the capital funds already awarded to the above projects. For Fiscal Year 2000, the funding levels for planning and technical assistance have not yet been announced. Transportation Enhancements Activities (TEA) is a federal program that funds primarily pedestrian, bicycle, landscaping, and historic preservation transportation projects. TEA provides $48 million over a six-year period (1999-2004) to the nine-county Bay Area, half of which will go into a regional discretionary funding program administered by MTC and half of which will be distributed among the nine counties on a formula basis. In Fiscal Year 1999, $4 million in Regional Discretionary Funding was added to the $5 million already designated for the TLC Capital Program. Similar funding levels are expected for the TLC Capital Program in fiscal year 2000. Finally, the Transportation and Community and System Preservation (TCSP) Pilot Program provides $25 million nationwide in Fiscal Year 2000 for planning and capital projects to address the relationship between transportation investments, land development patterns and environmental protection.

RESEARCH, DEVELOPMENT AND DEMONSTRATION

BART continues to work in various R&D areas with prior grant funds, including Station Cars and Superconducting Magnetic Energy Storage. Prior allocation of BART funds are being used to study possible advances in Adaptive Diagnostic Systems for improved transit vehicle reliability and faster, more efficient vehicle maintenance. In FY 2000, BART will allocate an additional $0.5 million to continue the funding for its R&D program. BART will continue to seek grant funding for technological advances from specialized sources for which basic system renovation and expansion projects are not eligible.

Table 1

Track One Program – Funding Needs

All figures in thousands of dollars (three decimals places dropped).

Project	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
SYSTEM RENOVATION PROGRAM												
Rolling Stock												
Phase 1	465,082	266,579	198,503	89,139	82,164	22,600	4,600	0	0	0	0	0
Phase 2	14,984	10,000	4,984	4,984	0	0	0	0	0	0	0	0
Subtotal Rolling Stock	***480,066***	***276,579***	***203,487***	***94,123***	***82,164***	***22,600***	***4,600***	***0***	***0***	***0***	***0***	***0***
Mainline												
Phase 1	106,682	59,811	46,871	6,238	5,667	3,240	3,324	9,249	9,412	9,741	0	0
Phase 2	100,796	1,048	99,748	6,893	4,371	6,753	8,115	17,644	1,865	1,017	12,141	40,949
Subtotal Mainline	***207,478***	***60,859***	***146,619***	***13,131***	***10,038***	***9,993***	***11,439***	***26,893***	***11,277***	***10,758***	***12,141***	***40,949***
Stations												
Phase 1	214,504	142,039	72,465	15,340	7,040	5,435	5,780	4,071	4,000	4,000	11,000	15,800
Phase 2	118,889	4,040	114,849	1,000	0	0	0	6,000	10,500	28,150	7,875	61,324
Subtotal Stations	***333,393***	***146,079***	***187,314***	***16,340***	***7,040***	***5,435***	***5,780***	***10,071***	***14,500***	***32,150***	***18,875***	***77,124***
Controls & Communications												
Phase 1	255,383	154,234	101,149	43,997	12,450	17,167	6,545	6,734	6,383	6,588	500	785
Phase 2	162,890	212	162,679	2,435	201	10,228	10,256	19,886	15,746	246	31,556	72,123
Subtotal Controls & Communications	***418,274***	***154,446***	***263,828***	***46,432***	***12,651***	***27,395***	***16,801***	***26,620***	***22,129***	***6,834***	***32,056***	***72,909***
Facility Renovation and Replacement												
Phase 1	46,086	24,663	21,423	4,404	2,175	2,225	3,305	3,375	3,424	2,515	0	0
Phase 2	13,281	21	13,260	0	0	0	0	0	0	0	2,590	10,670
Subtotal Facility Renovation & Replacement	***59,367***	***24,684***	***34,683***	***4,404***	***2,175***	***2,225***	***3,305***	***3,375***	***3,424***	***2,515***	***2,590***	***10,670***
Work Equipment												
Phase 1	37,941	11,871	26,070	3,150	3,340	3,530	3,720	3,910	4,110	4,310	0	0
Phase 2	34,831	0	34,831	100	1,066	110	115	120	434	628	5,277	26,981
Subtotal Work Equipment	***72,772***	***11,871***	***60,901***	***3,250***	***4,406***	***3,640***	***3,835***	***4,030***	***4,544***	***4,938***	***5,277***	***26,981***
SUBTOTAL SYSTEM RENOVATION PROGRAM	***1,571,350***	***674,518***	***896,831***	***177,680***	***118,474***	***71,288***	***45,760***	***70,989***	***55,874***	***57,195***	***70,939***	***228,633***
EXTENSIONS PROGRAM - Phase 1												
to Colma (FFGA)	170,179	170,179	0	0	0	0	0	0	0	0	0	0
to Dublin-Pleasanton	543,050	543,050	0	0	0	0	0	0	0	0	0	0
to Pittsburg-Bay Point	505,740	505,740	0	0	0	0	0	0	0	0	0	0
to San Francisco International Airport (SFO)	1,513,200	1,439,300	73,900	26,800	0	47,100	0	0	0	0	0	0
to Warm Springs	185,800	19,700	166,100	4,000	4,000	4,500	7,900	11,500	19,900	19,500	0	94,800
Oakland Airport Connector	4,000	4,000	0	0	0	0	0	0	0	0	0	0
Pittsburg-Bay Point to Railroad Ave.	60,000	60,000	0	0	0	0	0	0	0	0	0	0
SUBTOTAL EXTENSIONS PROGRAM	***2,981,969***	***2,741,969***	***240,000***	***30,800***	***4,000***	***51,600***	***7,900***	***11,500***	***19,900***	***19,500***	***0***	***94,800***
SEISMIC RETROFIT PROGRAM - Phase 2												
Caltrans Local Seismic Retrofit Program	171,200	0	171,200	171,200	0	0	0	0	0	0	0	0
Seismic retrofit projects	26,276	336	25,940	9,240	8,600	8,100	0	0	0	0	0	0
SUBTOTAL SEISMIC RETROFIT PROGRAM	***197,476***	***336***	***197,140***	***180,440***	***8,600***	***8,100***	***0***	***0***	***0***	***0***	***0***	***0***
SERVICE IMPROVEMENT PROGRAM												
Phase 1	67,197	46,743	20,454	14,954	5,500	0	0	0	0	0	0	0
Phase 2	46,691	14,180	32,511	12,398	5,200	4,617	4,416	0	0	5,880	0	0
SUBTOTAL SERVICE IMPROVEMENT PROGRAM	***113,888***	***60,923***	***52,965***	***27,352***	***10,700***	***4,617***	***4,416***	***0***	***0***	***5,880***	***0***	***0***
RESEARCH, DEVELOPMENT & DEMONSTRATION												
Phase 1	4,243	4,243	0	0	0	0	0	0	0	0	0	0
Phase 2	500	0	500	500	0	0	0	0	0	0	0	0
SUBTOTAL RESEARCH, DEVELOPMENT & DEMONSTRATION	***4,743***	***4,243***	***500***	***500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
OTHER FINANCIAL OBLIGATIONS												
Phase 1	100,041	99,481	560	80	80	80	80	80	80	80	0	0
Phase 2	320	0	320	0	0	0	0	0	0	0	80	240
SUBTOTAL OTHER FINANCIAL OBLIGATIONS	***100,361***	***99,481***	***880***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***240***
TOTAL TRACK ONE FUNDING NEEDS	4,969,786	3,581,470	1,388,315	416,852	141,854	135,685	58,156	82,569	75,854	82,655	71,019	323,673

Table 2

Track One Program – Funding Sources

All figures in thousands of dollars (three decimals places dropped).

Project	Total Program	Allocated to 6/30/99	Amount to be Allocated	Fiscal Year Programmed								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
SYSTEM RENOVATION PROGRAM												
MTC RESOLUTION 2672												
Federal Section 5309FG	279,847	263,560	16,287	0	0	0	0	16,287	0	0	0	0
Federal Section 5307	89,782	36,795	52,987	10,950	10,394	16,816	11,728	3,100	0	0	0	0
CMAQ/STP	30,000	20,000	10,000	0	5,000	5,000	0	0	0	0	0	0
State Proposition 108	15,000	15,000	0	0	0	0	0	0	0	0	0	0
State TCI	2,322	2,322	0	0	0	0	0	0	0	0	0	0
MTC Bridge Tolls	33,076	20,000	13,076	6,122	1,966	2,477	2,512	0	0	0	0	0
GRANT FUNDING PER MTC RESOLUTION 2672	***450,027***	***357,677***	***92,350***	***17,071***	***17,359***	***24,293***	***14,240***	***19,387***	***0***	***0***	***0***	***0***
1995 Bond Proceeds	90,470	90,470	0	0	0	0	0	0	0	0	0	0
1998 Bond Proceeds	113,332	112,267	1,065	1,065	0	0	0	0	0	0	0	0
TOTAL FUNDING PER MTC RESOLUTION 2672	***653,829***	***560,414***	***93,415***	***18,136***	***17,359***	***24,293***	***14,240***	***19,387***	***0***	***0***	***0***	***0***
Federal Section 5309FG	158,826	0	158,826	0	0	0	0	0	15,503	16,587	31,400	95,336
Federal Section 5307	79,496	2,766	76,730	0	0	3,680	10,060	12,404	7,743	7,989	8,269	26,585
CMAQ/STP	98,843	0	98,843	4,073	5,870	8,500	0	12,480	11,600	11,600	12,300	32,420
State TCI	1,525	1,525	0	0	0	0	0	0	0	0	0	0
State STIP	71,287	0	71,287	43,157	0	0	0	4,900	5,980	3,250	3,500	10,500
MTC Bridge Tolls	70,142	1,912	68,231	616	633	2,647	2,935	11,068	8,712	9,044	6,742	25,835
1998 Bond Proceeds	34,796	33,202	1,594	260	0	1,101	233	0	0	0	0	0
Planned 1999 Bond Proceeds	129,800	0	129,800	129,800	0	0	0	0	0	0	0	0
Interest Earnings	13,099	9,099	4,000	4,000	0	0	0	0	0	0	0	0
Reimbursement	1,579	630	949	949	0	0	0	0	0	0	0	0
Private Sector Financing	11,000	11,000	0	0	0	0	0	0	0	0	0	0
Previous Reserves	69,502	59,848	9,654	2,970	6,684	0	0	0	0	0	0	0
Miscellaneous Grants	49,135	49,135	0	0	0	0	0	0	0	0	0	0
Allocations from Operating	128,992	20,992	108,000	9,807	8,789	6,406	9,107	9,644	8,837	8,724	8,727	37,960
TOTAL FUNDING NOT MTC RESOLUTION 2672	***918,021***	***190,108***	***727,913***	***195,632***	***21,975***	***22,333***	***22,335***	***50,496***	***58,374***	***57,194***	***70,938***	***228,636***
SUBTOTAL SYSTEM RENOVATION PROGRAM	**1,571,850**	**750,522**	**821,328**	**213,768**	**39,334**	**46,627**	**36,575**	**69,883**	**58,374**	**57,194**	**70,938**	**228,636**
SERVICE IMPROVEMENT, RESEARCH & DEVELOPMENT AND OTHER FINANCIAL OBLIGATIONS												
Federal Section 5309FG	4,704	0	4,704	0	0	0	0	0	0	4,704	0	0
CMAQ/STP	6,000	0	6,000	0	6,000	0	0	0	0	0	0	0
STATE TCI	348	348	0	0	0	0	0	0	0	0	0	0
State STIP	2,000	0	2,000	2,000	0	0	0	0	0	0	0	0
MTC Bridge Tolls	1,176	0	1,176	0	0	0	0	0	0	1,176	0	0
1995 Bond Proceeds	39,882	36,922	2,960	2,960	0	0	0	0	0	0	0	0
1998 Bond Proceeds	57,472	57,472	0	0	0	0	0	0	0	0	0	0
Planned 1999 Bond Proceeds	12,200	967	11,233	0	3,600	4,617	3,016	0	0	0	0	0
Interest Earnings	19,233	17,003	2,230	630	1,600	0	0	0	0	0	0	0
1995 Cross Border Lease	2,665	2,665	0	0	0	0	0	0	0	0	0	0
Previous Reserves	9,698	9,698	0	0	0	0	0	0	0	0	0	0
Miscellaneous Grants	42,923	34,623	8,300	0	8,300	0	0	0	0	0	0	0
Allocations from Operating	20,190	17,610	2,580	850	550	540	80	80	80	80	80	240
SUBTOTAL SERVICE IMPROVEMENT, R&D AND OTHER FIN. OB.	**218,492**	**177,308**	**41,184**	**6,440**	**20,050**	**5,157**	**3,096**	**80**	**80**	**5,961**	**80**	**240**
SEISMIC RETROFIT PROGRAM												
Federal Section 5307	19,760	0	19,760	6,400	6,880	6,480	0	0	0	0	0	0
MTC Bridge Tolls	4,940	0	4,940	1,600	1,720	1,620	0	0	0	0	0	0
Interest Earnings	1,000	0	1,000	1,000	0	0	0	0	0	0	0	0
Miscellaneous Grants (Caltrans Local Seismic Retrofit Program)	170,336	336	170,000	170,000	0	0	0	0	0	0	0	0
Allocations from Operating	1,440	0	1,440	1,440	0	0	0	0	0	0	0	0
SUBTOTAL SEISMIC RETROFIT PROGRAM	**197,476**	**336**	**197,140**	**180,440**	**8,600**	**8,100**	**0**	**0**	**0**	**0**	**0**	**0**
EXTENSIONS PROGRAM												
Funding for Colma extension (FFGA)	170,179	170,179	0	0	0	0	0	0	0	0	0	0
Funding for Dublin-Pleasanton extension	543,050	543,050	0	0	0	0	0	0	0	0	0	0
Funding for Pittsburg-Bay Point extension	505,740	505,740	0	0	0	0	0	0	0	0	0	0
Funding for San Francisco Airport extension (SFO) [1]	1,421,500	1,421,500	0	0	0	0	0	0	0	0	0	0
Dedicated bond issue for SFO CAPRA	71,700	0	71,700	24,600	0	47,100	0	0	0	0	0	0
Allocations from Operating for SFO CAPRA	7,500	5,300	2,200	2,200	0	0	0	0	0	0	0	0
Power Substation for SFO (1998 Bond Proceeds)	12,500	12,500	0	0	0	0	0	0	0	0	0	0
Funding for Warm Springs extension	185,800	19,700	166,100	4,000	4,000	4,500	7,900	11,500	19,900	19,500	0	94,800
Funding for Oakland Airport connector	4,000	4,000	0	0	0	0	0	0	0	0	0	0
Existing Measure C funding for Bay Point to Railroad Ave. extensi	60,000	60,000	0	0	0	0	0	0	0	0	0	0
SUBTOTAL EXTENSIONS PROGRAM	**2,981,969**	**2,741,969**	**240,000**	**30,800**	**4,000**	**51,600**	**7,900**	**11,500**	**19,900**	**19,500**	**0**	**94,800**
TOTAL TRACK ONE PROGRAM	**4,969,786**	**3,670,135**	**1,299,652**	**431,448**	**71,984**	**111,484**	**47,571**	**81,463**	**78,354**	**82,655**	**71,018**	**323,676**

Table 3

Track Two Program – Funding Needs

All figures in thousands of dollars (three decimal places dropped).

TIER PROGRAM AREA PROJECT	FUNDING REQUIREMENT *
TIER ONE	
ROLLING STOCK	
Fleet upgrades	18,000
Security cameras installation in A & B cars	6,000
MAINLINE	
STATIONS	
CONTROLS & COMMUNICATIONS	
FACILITY	
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
SEISMIC RETROFIT	
Seismic Retrofit Program Segment I - Caltrans Local Seismic Retrofit Program (BART Share)	13,800
Seismic Retrofit Program Segment II - Lifeline Program	145,300
Seismic Retrofit Program Segment III (Additional Critical Aerial Structures and Stations)	125,000
TOTAL TIER ONE	**308,100**
TIER TWO	
ROLLING STOCK	
C-1 car renovation	318,000
MAINLINE	
STATIONS	
Replace platform edge detectable warning system at 20 core stations	4,800
Rehab. garage and other elevators (includes LMA)	3,600
Replace North Berkeley Station ceiling	1,284
General station renovation	15,000
CONTROLS & COMMUNICATIONS	
FACILITY	
Rehabilitation of TransBay Tube facility	1,200
Car wash facility replacement at Concord & Hayward	8,400
Additional storage facilities	9,720
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
24th Street / Mission access and station area improvements	0
Lafayette access and station area improvements	0
West Oakland access and station area improvements	0
SEISMIC RETROFIT	
TOTAL TIER TWO	**362,004**

* Note: All Track Two figures are current estimates in 1999 dollars.

Table 3 (continued)

Track Two Program – Funding Needs (continued)

All figures in thousands of dollars (three decimal places dropped).

TIER PROGRAM AREA PROJECT	FUNDING REQUIREMENT *
TIER THREE	
ROLLING STOCK	
MAINLINE	
Dry standpipes at I-680 and Springbrook crossings	444
Remove gaps in handrails and obstructions on emergency walkways	2,400
STATIONS	
General station renovation (FY00 cleanup incl. relamp & paint)	3,400
Replace hydraulic lift cylinders	4,800
AFC upgrades to S/B equip, software & electronics	4,800
AFC (IBM) compressor replacement	696
Remote sensor elevator/escalator for extensions stations	540
Energy conservation	25,428
CONTROLS & COMMUNICATIONS	
AATC on CSX/DPX/PAX/SFO lines	32,400
Telephone switch replacement (19 locations)	4,800
Install new systems, yard, shop & tower data network	1,920
AVI readers at yards & other locations	4,800
FACILITY	
Resurface roads/parking and relamp shop/yard exterior lights	372
Replace yard disconnect enclosures	744
Overhead cranes – recondition (Hayward, Richmond, Concord, D.C.)	2,400
Paint and repair facility	2,400
Replace shop roll-up doors (Hayward, Richmond, Concord, Oakland)	1,500
Recondition shop/yard sump pumps	312
Replace Oakland Shop fuel facility	1,200
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
Pathfinder signs	600
Ashby access and station area improvements	0
Balboa Park access and station area improvements	0
Bayfair access and station area improvements	0
Oakland Coliseum access and station area improvements	0
Rockridge access and station area improvements	0
San Leandro access and station area improvements	0
Union City access and station area improvements	0
SEISMIC RETROFIT	
Seismic Retrofit Program Segment IV (Aerial Structures and Various Stations)	185,000
TOTAL TIER THREE	**280,956**
TIER FOUR	
ROLLING STOCK	
Install automatic train control restoration units (ARU)	3,000
MAINLINE	
STATIONS	
CONTROLS & COMMUNICATIONS	
Network hardware & software upgrades (replacements)	10,800
FACILITY	
Train operator training simulator	1,200
Lake Merritt Building renovation	8,400
Replace grease/oil facilities (Hayward, Richmond, Concord, D.C.)	192
Storage area canopy, lighting and office at Richmond Shop	216
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
Additional capacity enhancement program	1,200,000
SEISMIC RETROFIT	
Seismic Retrofit Program Segment V (Other BART Facilities)	130,000
TOTAL TIER FOUR	**1,353,808**
TOTAL TRACK TWO	**2,304,868**

* Note All Track Two figures are current estimates in 1999 dollars.

Chapter Five: Project Listings

FUNDING NEEDS

I. SYSTEMWIDE RENOVATION PROGRAM

I-A. Rolling Stock Renovation (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment 2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1												
c Replace A-& B-car door components	4,688	4,688	0									
c Replace electrical couplers on C1-cars	2,068	2,068	0									
c Replace batteries on A-, B-, and C1-cars	1,900	1,900	0									
c Wheel upgrade program	2,026	2,026	0									
A- & B- car renovation [1]	454,400	255,897	198,503	89,139	82,164	22,600	4,600					
Subtotal Phase 1	***465,082***	***266,579***	***198,503***	***89,139***	***82,164***	***22,600***	***4,600***	***0***	***0***	***0***	***0***	***0***
Phase 2												
C-1 car mid-life overhaul (HVAC, carpets and seats)	10,000	10,000	0									
C-1 car mid-life overhaul (doors, brakes, propulsion & liners)	4,984	0	4,984	4,984								
Subtotal Phase 2	***14,984***	***10,000***	***4,984***	***4,984***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Total Track One	***480,066***	***276,579***	***203,487***	***94,123***	***82,164***	***22,600***	***4,600***	***0***	***0***	***0***	***0***	***0***

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[1] *"Funding to date" includes all programmed federal, state, bridge toll, and BART funds as follows: $239,472,500 in Sec. 3, $20,000,000 in CMAQ, $1,973,500 in TCI, $15,000,000 in Prop. 108 bonds, $16,000,000 in bridge tolls, and $8,271,000 in BART funds.*

I-A. Rolling Stock Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 1			
Fleet upgrades	18,000	0	18,000
Security cameras installation in A & B cars	6,000	0	6,000
Subtotal Tier 1	***24,000***	***0***	***24,000***
Tier 2			
C1-car renovation	318,000	0	318,000
Subtotal Tier 2	***318,000***	***0***	***318,000***
Tier 4			
Install automatic train control restoration units (ARU)	3,000	0	3,000
Subtotal Tier 4	***3,000***	***0***	***3,000***
Total Track Two	***345,000***	***0***	***345,000***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Rolling Stock Renovation Program (Track One & Two)	**825,066**	**276,579**	**548,487**

NOTES:

(1) *All figures in thousands of dollars (three decimal places dropped).*

(2) *Figures indicate project programming, reflecting project commitment requirements.*

(3) *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-B. Mainline Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Track embankment upgrade	243	243	0									
c	BHT fire protection modifications	1,895	1,895	0									
c	TBT cathodic corrosion protection	3,328	3,328	0									
c	Replace dry with wet standpipes	8,927	8,927	0									
c	Recoat steel tunnel liner rings	586	586	0									
	R-O-W fencing	458	458	0									
	Caltrans reimbursable projects	3,097	3,097	0									
	Caltrans reimbursable (I-880 support)	350	350	0									
c	Repaint girders and bridges	2,012	2,012	0									
c	Replace sump pumps in subway tunnels	3,306	3,306	0									
	Replace rail	37,012	13,620	23,392	3,078	3,158	3,240	3,324	3,410	3,529	3,653		
	Traction power equipment renovation	27,655	10,000	17,655					5,684	5,883	6,088		
c	Rehab subway vent fans	1,337	1,337	0									
	Emergency mainline repairs	11,514	5,690	5,824	3,160	2,509			155				
	Traction power house roofs	420	420	0									
c	Asbestos abatement (Phases 1-4)	4,542	4,542	0									
	Subtotal Phase 1	***106,682***	***59,811***	***46,871***	***6,238***	***5,667***	***3,240***	***3,324***	***9,249***	***9,412***	***9,741***	***0***	***0***
	Phase 2												
	Replace rail	15,936	0	15,936								3,781	12,155
	Rehab traction power equipment	62,667	1,048	61,619	4,244	4,371	6,753	8,115	2,674	1,496	246	8,000	25,720
	TBT cathodic corrosion protection	6,000	0	6,000					6,000				
	Emergency standby power	1,700	0	1,700	1,700								
	Tunnel ventilation and TBT fan and main damper control imp.s	6,000	0	6,000					6,000				
	Caltrans reimbursable projects	949	0	949	949								
	Future repaint girders and bridges	1,200	0	1,200									1,200
	Lake Merritt Channel subway repair	2,400	0	2,400					2,400				
	Emergency mainline repairs	3,944	0	3,944					570	369	771	360	1,874
	Subtotal Phase 2	***100,796***	***1,048***	***99,748***	***6,893***	***4,371***	***6,753***	***8,115***	***17,644***	***1,865***	***1,017***	***12,141***	***40,949***
	Total Track One	***207,478***	***60,859***	***146,619***	***13,131***	***10,038***	***9,993***	***11,439***	***26,893***	***11,277***	***10,758***	***12,141***	***40,949***

I-B. Mainline Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 3			
Dry standpipes at I-680 and Springbrook crossings	444	0	444
Remove gaps in handrail and obstructions on emergency	2,400	0	2,400
Subtotal Tier 3	*2,844*	*0*	*2,844*
Total Track Two	*2,844*	*0*	*2,844*

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Mainline Renovation Program (Track One & Two)	**210,322**	**60,859**	**149,463**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-C. Stations Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Replace LMS concrete roof	215	215	0									
c	Replace security gates at some stations	34	34	0									
c	12th Street elevator replacement	900	900	0									
c	Replace station fire alarms	350	350	0									
c	Replace four Embarcadero escalators	2,777	2,777	0									
c	Replace floors on ten elevators	510	510	0									
c	ADA key station informational signage	470	470	0									
c	Stations security program	4,248	4,248	0									
c	Agent ticket reader	330	330	0									
c	Modify change machines	925	925	0									
c	Cubic faregate modifications	772	772	0									
c	Add faregates from storage at var. stations	1,062	1,062	0									
c	ADA AFC	1,500	1,500	0									
c	Bill-to-bill changer prototype	72	72	0									
c	Replace fire mains at three stations	250	250	0									
c	Replace and add bike lockers	597	597	0									
c	MacArthur Station emergency egress improvement	364	364	0									
	Escalator overhaul	28,027	28,027	0									
	Replace 19 station escalators	11,919	11,919	0									
	Ogawa Plaza project	251	251	0									
	Elevator overhaul	10,595	10,595	0									
	ADA key station informational signage	452	452	0									
	Remove architectural barriers	455	455	0									
	Replace bus transfer ticket machines	916	916	0									
	Energy conservation (Embarcadero Station)	1,713	1,713	0									
c	Credit-debit vendor	3,406	3,406	0									
	AFC modernization/Translink	77,776	42,241	35,535	13,210	7,040	5,435	5,780	4,071				
	Interim AFC upgrades	4,320	4,320	0									
c	Replace station signage	1,456	1,456	0									
	ADA key station parking modifications	1,350	1,350	0									
	Eight stations, general renovation	13,730	13,730	0									
	Four stations, general renovation	5,761	3,631	2,130	2,130								
c	Replace station roofing	851	851	0									
	Future general station renovation	34,800	0	34,800						4,000	4,000	11,000	15,800
	Repair platform subsurfaces	1,344	1,344	0									
	Replace platform edge tile	7	7	0									
	Subtotal Phase 1	***214,504***	***142,039***	***72,465***	***15,340***	***7,040***	***5,435***	***5,780***	***4,071***	***4,000***	***4,000***	***11,000***	***15,800***
	Phase 2												
	Access Upgrade: MacArthur Station elevator modifications	1,957	1,957	0									
	Access Upgrade: non-key station parking modifications	733	733	0									
	Access Upgrade: AFC swing gates and related	350	350	0									
	Access Upgrade: electronic elevator signs	400	400	0									
	Access Upgrade: misc. bathroom barrier removal	400	400	0									
	Access Upgrade: bathroom & elevator directional signs	200	200	0									
	Station painting and lighting	1,000	0	1,000	1,000								
	Automatic fare collection equipment expansion	36,000	0	36,000							3,250	7,875	24,875
	Replace station & yard P.A. and platform & security CCTV	5,100	0	5,100									5,100
	Stations security program	42,000	0	42,000						10,500	10,500		21,000
	Future station reroofing	6,750	0	6,750									6,750
	Replace station stair treads	3,600	0	3,600									3,600
	Station parking lot surface repair / replace	14,400	0	14,400							14,400		
	Replace Stewart-Warner signheads	6,000	0	6,000					6,000				
	Subtotal Phase 2	***118,889***	***4,040***	***114,849***	***1,000***	***0***	***0***	***0***	***6,000***	***10,500***	***28,150***	***7,875***	***61,324***
	Total Track One	***333,393***	***146,079***	***187,314***	***16,340***	***7,040***	***5,435***	***5,780***	***10,071***	***14,500***	***32,150***	***18,875***	***77,124***

I-C. Stations Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
Replace platform edge detectable warning sys. at 20 core stations	4,800	0	4,800
Renovate garage and other elevators, including LMA	3,600	0	3,600
Replace North Berkeley Station ceiling	1,284	0	1,284
General station renovation (passenger comfort improvements)	15,000	0	15,000
Subtotal Tier 2	***24,684***	***0***	***24,684***
Tier 3			
Station painting and relamping	3,400	0	3,400
Replace hydraulic lift cylinders	4,800	0	4,800
AFC upgrades to S/B equipment, software & electronics	4,800	0	4,800
AFC (IBM) compressor replacement	696	0	696
Remote sensor elevator/escalator for extension stations	540	0	540
Energy conservation	25,428	0	25,428
Subtotal Tier 3	***39,664***	***0***	***39,664***
Total Track Two	***64,348***	***0***	***64,348***

• *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Stations Renovation Program (Track One & Two)	**397,741**	**146,079**	**251,662**

NOTES:

(1) *All figures in thousands of dollars (three decimal places dropped).*

(2) *Figures indicate project programming, reflecting project commitment requirements.*

(3) *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-D. Controls & Communications Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Reverse running in TBT	180	180	0									
c	Emergency control center back-up	29	29	0									
c	Train ID enhancement	1,580	1,580	0									
c	Yard train control improvements	1,946	1,946	0									
c	Cash handling improvements	1,207	1,207	0									
c	Replace MVDDs	373	373	0									
	Train control rehab	48,790	9,802	38,988	5,130	5,263	5,400	5,540	5,684	5,883	6,088		
	Fiber optic/radio network (TRACS)	65,081	65,081	0									
	Advanced automatic train control	102,600	48,500	54,100	36,867	6,471	10,762						
	Automated Police dispatch	452	452	0									
	Comspec position in Central	350	350	0									
	Replace workstation consoles in Central	1,187	1,187	0									
c	Replace MetroVision destination signs	1,300	1,300	0									
	NXTGEN [1]	19,762	19,762	0									
	MIS mainframe computer	600	600	0									
c	Replace MARIS	1,615	1,615	0									
	DTS replacement (initial phase)	1,000	0	1,000	1,000								
	Yard cable plant replacement	550	0	550					550				
	Emergency controls & communications	6,781	270	6,511	1,000	716	1,005	1,005	500	500	500	500	785
	Subtotal Phase 1	***255,383***	***154,234***	***101,149***	***43,997***	***12,450***	***17,167***	***6,545***	***6,734***	***6,383***	***6,588***	***500***	***785***
	Phase 2												
	Augment police radio coverage	212	212	0									
	Train control rehab	30,350	0	30,350	1,235	201	228	256	286	266	246	6,556	21,075
	DTS replacement (second phase)	6,000	0	6,000						6,000			
	800MHz portable radios	1,200	0	1,200	1,200	0	0	0	0	0	0		
	Wayside wiring for interlocking replacement underground	6,000	0	6,000						6,000			
	AATC complementary tech., central computer, remainder of core	106,000	0	106,000			10,000	10,000	10,000			25,000	51,000
	Operations computer replacement	9,600	0	9,600					9,600				
	Richmond and Daly City yards console replacement	2,880	0	2,880						2,880			
	Replace yard voice recorders	600	0	600						600			
	Emergency controls & communications	48	0	48	0	0	0	0	0	0	0	0	48
	Subtotal Phase 2	***162,890***	***212***	***162,679***	***2,435***	***201***	***10,228***	***10,256***	***19,886***	***15,746***	***246***	***31,556***	***72,123***
	Total Track One	***418,274***	***154,446***	***263,828***	***46,432***	***12,651***	***27,395***	***16,801***	***26,620***	***22,129***	***6,834***	***32,056***	***72,909***

[1] Does not include portions funded in extensions budgets.

I-D. Controls & Communications Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 3			
AATC on CSX/DPX/PAX/SFO lines	32,400	0	32,400
Telephone switch replacement (19 locations)	4,800	0	4,800
Install new systems, yard, shop and tower data network	1,920	0	1,920
AVI readers at yards and other locations	4,800	0	4,800
Subtotal Tier 3	***43,920***	***0***	***43,920***
Tier 4			
Network hardware and software upgrades (replacements)	10,800	0	10,800
Subtotal Tier 4	***10,800***	***0***	***10,800***
Total Track Two	***54,720***	***0***	***54,720***

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Controls & Communications Renovation Program (Track One & Two)	**472,994**	**154,446**	**318,548**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-E. Facility Renovation and Replacement (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Replace Hayward Shop fire main	233	233	0									
c	Replace Hayward wheel press	544	544	0									
c	Replace shop parts washers	550	550	0									
c	Yard fuel tanks	35	35	0									
c	Richmond Yard efficiency improvements	353	353	0									
c	Emergency Richmond Shop roof repairs	73	73	0									
c	Wheel truing machines	3,519	3,519	0									
c	Wheel/rail maintenance study	123	123	0									
c	Central receiving & distribution facility study	10	10	0									
	Hayward Shop traction motor repair facility	3,186	3,186	0									
c	Replace dust collector systems at Rich. & Conc.	1,646	1,646	0									
	Richmond oil/water separator tanks	136	136	0									
	Richmond transit vehicle washer	3,862	1,538	2,324	2,324								
c	Richmond Shop & Yard security improvements	1,712	1,712	0									
	Transfer track crossings	360	360	0									
	Reconfigure Transportation Buildings	3,375	3,375	0									
	CHB security improvements	19	19	0									
c	Replace Met Center fuel tank	673	673	0									
	Hayward test track security	97	97	0									
	1,000 volt shop power supplies	70	70	0									
	Employee facility improvements	1,000	1,000	0									
	Repairables inventory (approx. $2M per yr.)	21,511	5,412	16,099	2,080	2,175	2,225	2,305	2,375	2,424	2,515		
	Replace shop roofing	3,000	0	3,000				1,000	1,000	1,000			
	Subtotal Phase 1	***46,086***	***24,663***	***21,423***	***4,404***	***2,175***	***2,225***	***3,305***	***3,375***	***3,424***	***2,515***	***0***	***0***
	Phase 2												
	Repairables inventory (approx. $2M per yr.)	10,860	0	10,860								2,590	8,270
	Hayward Tower renovation	21	21	0									
	Future replace shop roofing	2,400	0	2,400									2,400
	Subtotal Phase 2	***13,281***	***21***	***13,260***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***2,590***	***10,670***
	Total Track One	***59,367***	***24,684***	***34,683***	***4,404***	***2,175***	***2,225***	***3,305***	***3,375***	***3,424***	***2,515***	***2,590***	***10,670***

I-E. Facility Renovation and Replacement (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
Rehabilitation of TransBay Tube facility	1,200	0	1,200
Transit vehicle washer replacement at Concord & Hayward	8,400	0	8,400
Additional storage facilities	9,720	0	9,720
Subtotal Tier 2	***19,320***	0	***19,320***
Tier 3			
Resurface roads/parking and relamp shop/yar exterior lights	372	0	372
Replace yard disconnect enclosures	744	0	744
Overhead cranes – recondition (Hayward, Richmond, Conc., D.C.)	2,400	0	2,400
Paint and repair facility	2,400	0	2,400
Replace shop roll-up doors (Hayward, Richmond, Concord, D.C.)	1,500	0	1,500
Recondition shop/yard sump pumps	312	0	312
Replace Oakland Shop fuel facility	1,200	0	1,200
Subtotal Tier 3	***8,928***	***0***	***8,928***
Tier 4			
Train operator training simulator	1,200	0	1,200
Lake Merritt Building renovation	8,400	0	8,400
Replace grease/oil facilities (Hayward, Richmond, Concord, D.C.)	192	0	192
Storage area canopy, lighting and office at Richmond Shop	216	0	216
Subtotal Tier 4	***10,008***	***0***	***10,008***
Total Track Two	***38,256***	***0***	***38,256***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Facility Renovation Program (Track One & Two)	**97,623**	**24,684**	**72,939**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-F. Work Equipment (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1 *(On-going projects 1995-2006)*												
Automotive-type vehicles ($1.2M per yr.)	15,228	4,028	11,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900		
M&E equipment (approx $200K per yr.)	2,483	733	1,750	220	230	240	250	260	270	280		
Miscellaneous	143	143	0									
Non-ops depts. equipment ($100K per yr.)	1,230	250	980	110	120	130	140	150	160	170		
Non-revenue rail vehicles ($850K per yr.)	10,075	2,975	7,100	890	930	970	1,010	1,050	1,100	1,150		
Other Ops depts. equipment ($100K per yr.)	1,294	314	980	110	120	130	140	150	160	170		
PC equipment ($500K per yr.–300 machines)	6,138	2,078	4,060	520	540	560	580	600	620	640		
ADA Equipment	350	350	0									
Subtotal Phase 1	***36,941***	***10,871***	***26,070***	***3,150***	***3,340***	***3,530***	***3,720***	***3,910***	***4,110***	***4,310***	***0***	***0***
Phase 1 (New)												
Currency counter replacement	1,000	1,000	0									
Subtotal Phase 1 (New)	***1,000***	***1,000***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Phase 2 *(Includes on-going projects 2007-2009)*												
Automotive-type vehicles ($1.2M per yr.)	8,600	0	8,600								2,000	6,600
M&E equipment (approx. $200K per yr.)	1,220	0	1,220								290	930
Non-Ops depts. equipment ($100K per yr.)	780	0	780								180	600
Non-revenue rail vehicles ($850K per yr.)	5,100	0	5,100								1,200	3,900
Other Ops depts. equipment ($100K per yr.)	780	0	780								180	600
PC equipment ($500K per yr.–300 machines)	4,245	0	4,245	100	105	110	115	120	130	140	810	2,615
Additional spare parts	14,106	0	14,106		961				304	488	617	11,736
Subtotal Phase 2	***34,831***	***0***	***34,831***	***100***	***1,066***	***110***	***115***	***120***	***434***	***628***	***5,277***	***26,981***
Total Track One	***72,772***	***10,871***	***60,901***	***3,250***	***4,406***	***3,640***	***3,835***	***4,030***	***4,544***	***4,938***	***5,277***	***26,981***

I-F. Work Equipment (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Total Track Two	*0*	*0*	*0*

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Work Equipment Renovation Program (Track One & Two)	**72,772**	**10,871**	**60,901**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

II. EXTENSIONS (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	to Colma (FFGA) [1]	170,179	170,179	0									
c	to Dublin-Pleasanton [1]	543,050	543,050	0									
c	to Pittsburg-Bay Point [1]	505,740	505,740	0									
	to San Francisco International Airport (SFO) [2][3]	1,513,200	1,439,300	73,900	26,800		47,100						
	to Warm Springs/Santa Clara Phase I [4]	185,800	19,700	166,100	4,000	4,000	4,500	7,900	11,500	19,900	19,500		94,800
	Oakland Airport Connector [4]	4,000	4,000	0									
	Pittsburg-Bay Point to Railroad Ave. [4]	60,000	60,000	0									
	Subtotal Phase 1	*2,981,969*	*2,681,969*	*240,000*	*30,800*	*4,000*	*51,600*	*7,900*	*11,500*	*19,900*	*19,500*	*0*	*94,800*
	Total Track One	***2,981,969***	***2,681,969***	***240,000***	***30,800***	***4,000***	***51,600***	***7,900***	***11,500***	***19,900***	***19,500***	***0***	***94,800***

[1] *"Total Cost" shown is programmed funding. Actual final cost to be determined upon financial close-out of projects.*

[2] *FTA approved funding plan includes $750M total from FTA ($154M has been appropriated to date), $99M total from the Amendment to the BART-SamTrans Agreement ($76.5M has been appropriated to date), $165.5M total in state funds ($104M appropriated to date), $10M in MTC-allocated bridge toll revenue ($7.4M received to date), $87M from the San Francisco International Airport (SFIA) and $8.5M from the SFO CAPRA.*

[3] *Includes Capital Reserve Account for grant-ineligible expenses of SFO. Total CAPRA is $79.2M, $8.5M of which is included in SFO project cost. Also includes $12.5M for the power substation.*

[4] *Track One portion of project, for which potential funding sources can be identified. See additional increment in Track Two below.*

II. EXTENSIONS (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Priority 2			
Pittsburg-Bay Point to Railroad Ave. (6)	140,300	0	140,300
Warm Springs/Santa Clara Phase I extension additional grants	360,300	0	360,300
Oakland Airport Connector other grants	125,900	0	125,900
West Dublin/Pleasanton station	39,370	0	39,370
Subtotal Priority 2	*665,870*	*0*	*665,870*
Priority 3			
Phase 2 and 3 Extensions to Antioch through West Contra Costa to Livermore within San Francisco through San Ramon Valley Corridor to Santa Clara County Commuter Rail (7)	TBD	0	TBD
Subtotal Priority 3	***TBD***	***0***	***TBD***
Total Track Two	*665,870*	*0*	*665,870*

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

(6) *Cost in 1996 dollars. Will be updated when a funding plan and implementation schedule can be finalized.*

(7) *BART is studying possible commuter rail service in numerous corridors in the greater Bay Area, and the State has approved BART management of the Capitol Corridor service extending from San Jose to Sacramento. Service plans and costs will be evaluated in BART's Strategic Planning exercise currently underway, and in light of BART's Extension Staging Policy.*

Total Extensions Program (Track One & Two)	**3,647,839**	**2,684,169**	**903,670**

NOTES:

(1) *All figures in thousands of dollars (three decimal places dropped).*

(2) *Figures indicate project programming, reflecting project commitment requirements.*

(3) *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

III. SEISMIC RETROFIT PROGRAM (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment 2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 2												
Caltrans seismic engineering study	336	336	0									
Caltrans Local Seismic Retrofit Program	171,200	0	171,200	171,200								
Transbay Tube / W. Oakland seismic joint seismic retrofit	8,000	0	8,000	8,000								
Aerial structures seismic retrofit	16,700	0	16,700		8,600	8,100						
General obligation bond election	1,240	0	1,240	1,240								
		0										
Subtotal Phase 2	***197,476***	***336***	***197,140***	***180,440***	***8,600***	***8,100***	***0***	***0***	***0***	***0***	***0***	***0***
Total Track One	***197,476***	***336***	***197,140***	***180,440***	***8,600***	***8,100***	***0***	***0***	***0***	***0***	***0***	***0***

III. SEISMIC RETROFIT PROGRAM (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 1			
Segment I - Caltrans Local Seismic Retrofit Program (Bart Share)	13,800	0	13,800
Segment II - Lifeline Program	145,300	0	145,300
Segment III - Additional critical aerial structures and stations	125,000		125,000
Subtotal Tier 1	***284,100***	***0***	***284,100***
Tier 3			
Segment IV - Additional aerial structures and various stations	185,000	0	185,000
Subtotal Tier 3	***185,000***	***0***	***185,000***
Tier 4			
Segment V - Other BART facilities	130,000	0	130,000
Subtotal Tier 4	***130,000***	***0***	***130,000***
Total Track Two	***599,100***	***0***	***599,100***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Seismic Retrofit Program (Track One & Two)	**796,576**	**336**	**796,240**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

IV. SERVICE IMPROVEMENTS (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	BayFair transit center	1,000	1,000	0									
c	Hayward transit center operational facility	1,282	1,282	0									
c	Walnut Creek transit center	2,930	2,930	0									
c	Concord transit center	1,649	1,649	0									
c	Pittsburg park/ride	1,656	1,656	0									
c	Daly City transit center	6,433	6,433	0									
c	Anti-graffiti program	580	580	0									
	System Capacity Study	784	784	0									
	Fruitvale transit center	2,645	2,645	0									
	Coliseum transit center	732	732	0									
	Hayward transit center canopies	1,248	1,248	0									
	South Hayward transit center	1,123	1,123	0									
	Union City transit center	2,313	2,313	0									
	Fremont transit center	2,897	2,897	0									
	Pl. Hill park/ride for I-680/24 mitigation	879	879	0									
	Concord shop expansion	21,713	7,592	14,121	14,121								
	Hayward yard improvements	1,333	500	833	833								
	El Cerrito Plaza transit center	420	420	0									
	Richmond transit center	1,678	1,678	0									
	West Oakland transit center	217	217	0									
	System access planning & monitoring	1,040	1,040	0									
	Pathfinder sign program prototype	230	230	0									
	Bicycle access improvements	704	704	0									
	Station area development planning (Joint Development.)	1,823	1,823	0									
	Long range planning	4,388	4,388	0									
	El Cerrito Plaza access and sta. area improvement.	5,500	0	5,500		5,500							
	Subtotal Phase 1	***67,197***	***46,743***	***20,454***	***14,954***	***5,500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
	Phase 2												
	Additional new bike lockers	500	500	0									
	Fruitvale transit village	3,080	3,080	0									
	Hayward yard improvements	3,262	0	3,262	3,262								
	Hayward shop lifts	10,497	0	10,497			4,617				5,880		
	Hayward component repair	6,206	0	6,206	6,206								
	Richmond shop lifts	4,416	0	4,416				4,416					
	Daly City transit vehicle washer	5,200	0	5,200		5,200							
	Automatic fare collection equipment renovation & expansion stud	500	0	500	500								
	Service improvements study	300	0	300	300								
	Bay Point parking expansion	4,200	4,200	0									
	Dublin Pleasanton parking expansion	4,600	4,600	0									
	Mission Street Corridor Revitalization Project (16th Street Mission)	130	0	130	130								
	BART-SFO Extension bicycle trail & San Mateo Co. improvements	2,000	0	2,000	2,000								
	Unassigned capital need	1,800	1,800	0									
	Subtotal Phase 2	***46,691***	***14,180***	***32,511***	***12,398***	***5,200***	***4,617***	***4,416***	***0***	***0***	***5,880***	***0***	***0***
	Total Track One	***113,888***	***60,923***	***52,965***	***27,352***	***10,700***	***4,617***	***4,416***	***0***	***0***	***5,880***	***0***	***0***

IV. SERVICE IMPROVEMENTS (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
24th Street / Mission access and station area improvments	TBD	0	TBD
Lafayette access and station area improvements	TBD	0	TBD
West Oakland access and station area improvments	TBD	0	TBD
Subtotal Tier 2	***TBD***	***0***	***TBD***
Tier 3			
Pathfinder signs further implementation	600	0	600
Ashby access and station area improvements	TBD	0	TBD
Balboa Park access and station area improvements	TBD	0	TBD
Bay Fair access and station area improvements	TBD	0	TBD
Oakland Coliseum access and station area improvements	TBD	0	TBD
Rockridge access and station area improvements	TBD	0	TBD
San Leandro access and station area improvements	TBD	0	TBD
Union City access and station area improvements	TBD	0	TBD
Subtotal Tier 3	***600***	***0***	***600***
Tier 4			
Additional Capacity Enhancement Program [1]	1,200,000	0	1,200,000
Subtotal Tier 4	***1,200,000***	***0***	***1,200,000***
Total Track Two	***1,200,600***	***0***	***1,200,600***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

[1] *Includes additional revenue vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; additional crossovers and storage tracks; and further expansion of maintenance shop and storage yard facilities.*

Total Service Improvements Program (Track One & Two)	**1,314,488**	**60,923**	**1,253,565**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

V. RESEARCH, DEVELOPMENT AND DEMONSTRATION (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1												
"CarLink" station cars demonstration	1,440	1,440	0									0
Electric vehicle charging kiosk demonstration	1,100	1,100	0									0
Superconducting Magnetic Energy Storage	468	468	0									0
Adoptive diagnostic systems	123	123	0									0
Sound mitigation/noise reduction program	350	350	0									0
R&D program	762	762	0									0
Subtotal Phase 1	***4,243***	***4,243***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Phase 2												
R&D program	500	0	500	500								
Subtotal Phase 2	***500***	***0***	***500***	***500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Total Track One	***4,743***	***4,243***	***500***	***500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***

V. RESEARCH, DEVELOPMENT AND DEMONSTRATION (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
Sound mitigation/noise reduction program (additional)	TBD	0	TBD
Adaptive diagnostic systems (additional)	TBD	0	TBD
Superconducting Magnetic Energy Storage (additional)	TBD	0	TBD
Traction power optimization	TBD	0	TBD
Other research and development	TBD	0	TBD
Subtotal Tier 2	*TBD*	*0*	*TBD*
Total Track Two	*TBD*	*0*	*TBD*

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Research, Development and Demonstration Program (Track One & Two)	**4,743**	**4,243**	**TBD**

NOTES:

(1) *All figures in thousands of dollars (three decimal places dropped).*

(2) *Figures indicate project programming, reflecting project commitment requirements.*

(3) *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

VI. OTHER FINANCIAL OBLIGATIONS (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1												
C-2 car bonds, Daly City surcharge reserve, Met Center capital reserve, project development, NPS headcount	100,041	99,481	560	80	80	80	80	80	80	80		0
Subtotal Phase 1	***100,041***	***99,481***	***560***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	0	0
Phase 2												
Met Center capital reserve	320	0 0	320								80	240
Subtotal Phase 2	***320***	***0***	***320***	0	0	0	0	0	0	0	***80***	***240***
Total Track One	***100,361***	***99,481***	***880***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***240***

VI. OTHER FINANCIAL OBLIGATIONS (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Total Track Two	*0*	*0*	*0*

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Other Financial Obligations Program (Track One & Two)	**100,361**	**99,481**	**880**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

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San Francisco Bay
Area Rapid Transit
District

FISCAL YEAR 2000
CAPITAL IMPROVEMENT PROGRAM

July 1999 through June 2010
Fiscal Years 2000 through 2010

ADOPTED — September 9, 1999

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FISCAL YEAR 2000
CAPITAL IMPROVEMENT PROGRAM

Fiscal Years 2000 through 2010

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The contents of this report reflect the views of BART, which is responsible for the facts, and accuracy of the data presented herein. The contents do not necessarily reflect the original views or policy of the USDOT. This report does not constitute a standard, specification or regulation, and does not preclude future labor contract negotiations or future BART Board deliberations regarding fares.

All projects discussed are subject to state and federal environmental review as required by law. Specific projects and project funding are subject to approval by the BART Board of Directors. Projects that do not yet satisfy these requirements are proposed projects. This report was researched and prepared by:

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San Francisco Bay Area Rapid Transit District

September 9, 1999

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Chapter One: Introduction

OVERVIEW OF PROGRAM

OVERVIEW OF THE CAPITAL IMPROVEMENT PROGRAM

The Framework: The Strategic Plan

This year, the Bay Area Rapid Transit District (BART or the District) committed itself to a new framework for decision-making at the District. The Strategic Plan, adopted by the Board of Directors in January 1999, will provide the context for decisions regarding the District's operating and capital priorities and investments. The Strategic Plan is composed of seven areas of concern, some of which build on the fundamental principles that have always guided BART's decision-making, such as commitment to customer service and to BART employees, dedication to fiscal prudence and optimization of transit travel demand. Other areas of concern reconfirm objectives that have surfaced in recent years, such as on-going renovation and renewal of the BART system. Station area development and other community-oriented activities have also been elevated in their importance in recent years. *Chapter Two: The Framework — The Strategic Plan* details the Strategic Plan framework as it applies to BART's *Capital Improvement Program* (CIP).

The Content: Project Descriptions, Status and Highlights

In order to fulfill the vision embodied by the Strategic Plan, BART must engage in equipment and facilities renovation and replacement, as well as prudent expansion of the system. *Chapter Three: The Content — Project Descriptions, Status and Highlights* outlines those projects BART has planned, programmed, commenced or completed within the Fiscal Years 2000 – 2010 time span of the *Capital Improvement Program (CIP).*

There are five major programs into which all of the approximately 275 separately listed projects are organized, and an additional category of other financial obligations. Three of the Program Areas have sub-program categories as well.

I. **System Renovation**
   A. Rolling Stock
   B. Mainline
   C. Stations
   D. Controls & Communications
   E. Facilities
   F. Work Equipment

II. **Extensions**
   A. Phase 1 Extensions
   B. Phase 2 & 3 Extensions

III. **Seismic Retrofit**

IV. **Service Improvements**
   A. Current Planned Expansion
   B. Additional Capacity Enhancement
   C. Station Area Development

V. **Research, Development & Demonstration**

A large segment of *Chapter Three* focuses on BART's Systemwide Renovation Program, the majority of which BART committed to as a comprehensive plan in 1995. The purpose of the Systemwide Renovation Program is to maintain BART's performance standards and to sustain and improve customer service and customer satisfaction. Entering its third decade of service in the early 1990s, the BART system had reached a critical point in its evolution. This system that had been a shiny, new high technology marvel at its inception had aged. The passage of time and the carriage of over a billion passengers had taken a toll on BART rail cars and stations, affecting their reliability, comfort and appearance. Many electronic and mechanical systems were approaching the end of their original design lives. It was time to begin reinvesting in the physical plant to ensure continuing service quality and reliability.

In addition to the renovation and renewal of its existing physical infrastructure, BART has also been expanding the system. Included in *Chapter Three* is a description of BART's Extensions Program. During the 1990's, five new stations and 23.5 miles of track were added to the original BART system. The Colma Extension extended BART from Daly City further into San Mateo County, facilitating travel on BART south of San Francisco. With the Pittsburg/Bay Point Extension, BART expanded into eastern Contra Costa County. The Dublin/Pleasanton Extension brought BART to the Tri-Valley area of Alameda County. In 1998, BART commenced construction of a four station, 8.7 mile region-linking extension to San Francisco International Airport.

Seismic safety is a top BART priority. This year, BART redefined its comprehensive Seismic Retrofit Program, which will raise the system to current design standards that would facilitate the immediate resumption of service after a major earthquake. *Chapter Three* discusses the contents and breadth of this program and outlines its segments.

The Bay Area has experienced rapid and substantial population and job growth over the past several years. Sizable regional growth has fueled consistent BART patronage growth. Accommodating this increased demand has required BART to dramatically increase service levels. As a result, BART must plan and implement prudent upgrades of its physical infrastructure to meet the heightened demands. Moreover, BART must continue to respond to the needs of its constituent communities, investing wisely in station area development, other passenger environment improvements and maintenance facility expansion. *Chapter Three* details the Service Improvements Program, which includes these improvements to the system.

In addition to renovation, improvement and expansion of the BART system, BART actively pursues a Research, Development & Demonstration Program, which investigates new technologies that improve BART's efficiency and operations by keeping BART on the cutting edge of technology. This program is further described in *Chapter Three*.

The Context: Funding Strategy

This CIP lists all of the projects that the District would implement over a ten year period, if adequate funding were available. The entire program totals almost $7.941 billion. A program of this size is currently beyond the level of funding that can reasonably be assumed to become available through existing sources over the next ten years. Therefore, in accordance with the approach taken by the Metropolitan Transportation Commission (MTC) in its development of the 20-year Regional Transportation Plan, BART's CIP is divided into two "tracks."

Track One is "financially constrained" per MTC's direction, and comprises those projects which are essential to continued safe and reliable operation of the system and for which potential funding sources can reasonably be identified. Track Two includes projects for which the projected near-term levels of identifiable funding sources are currently inadequate. Implementation of Track Two projects would require larger allocations to existing federal, state and local programs in the future and/or the creation of new funding sources.

Such a large capital improvement program merits a comprehensive funding strategy. BART pursues a diverse set of capital revenues and funding options. These include federal and state grants, sales tax and property tax revenues and passenger fares, among other revenues. See Chapter Four: The Context — Funding Strategy for more information on funding availability for various programs.

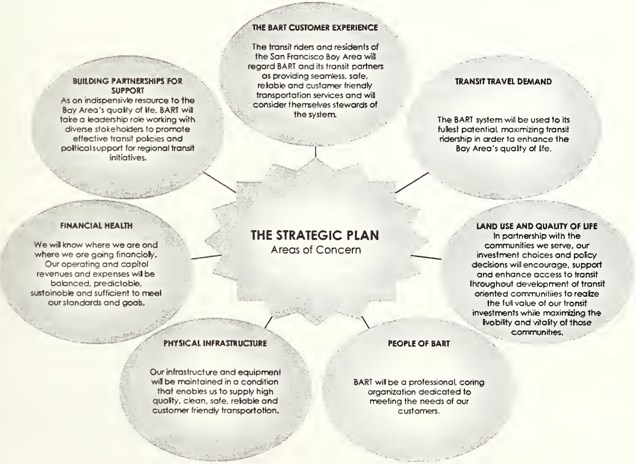
Chapter Two: The Framework

THE STRATEGIC PLAN

INTRODUCTION

In January 1999, BART adopted a Strategic Plan that will serve as the framework for the District as it plans for the future. The Strategic Plan is the result of several years of data-gathering, analysis and goal development by BART Directors, BART staff and the leaders and staff of BART partners in transit and local governments throughout the San Francisco Bay Area region. Although BART's Board of Directors has formally adopted the Strategic Plan and the visions and goals contained therein, a comprehensive implementation plan is still under development. As a result, the FY 2000 CIP will "connect the dots" between BART's historical governing principles, the projects commenced under those concepts and the new visions outlined in the Strategic Plan.

The Strategic Plan is organized around seven areas of concern: the BART Customer Experience, Building Partnerships for Support, Transit Travel Demand, Land Use and Quality of Life, People of BART, Physical Infrastructure and Financial Health. It is the defining visions conceived within these spheres that circumscribe BART's goals, which, in turn, will inform BART's financial priorities and investment decisions. Therefore, the *Capital Improvement Program*, BART's ten-year capital planning document, cannot be developed without close attention to the District-wide goals identified in each area of concern within the Strategic Plan. This chapter will briefly review each area of concern as defined in the Strategic Plan and will identify some of the projects that meet its goals.



THE BART CUSTOMER EXPERIENCE

The transit riders and residents of the San Francisco Bay Area will regard BART and its transit partners as providing seamless, safe, reliable and customer friendly transportation services and will consider themselves stewards of the system.

BUILDING PARTNERSHIPS FOR SUPPORT

As an indispensivle resource to the Bay Area's quality of life, BART will take a leadership role working with diverse stakeholders to promote effective transit policies and political support for regional transit initiatives.

TRANSIT TRAVEL DEMAND

The BART system will be used to its fullest potential, maximizing transit ridership in order to enhance the Bay Area's quality of life.

THE STRATEGIC PLAN

Areas of Concern

FINANCIAL HEALTH

We will know where we are and where we are going financially. Our operating and capital revenues and expenses will be balanced, predictable, sustainable and sufficient to meet our standards and goals.

LAND USE AND QUALITY OF LIFE

In partnership with the communities we serve, our investment choices and policy decisions will encourage, support and enhance access to transit throughout development of transit oriented communitiies to realize the full value of our transit investments while maximizing the livability and vitality of those communities.

PHYSICAL INFRASTRUCTURE

Our infrastructure and equipment will be maintained in a condition that enables us to supply high quality, clean, safe, reliable and customer friendly transportation.

PEOPLE OF BART

BART will be a professional, caring organization dedicated to meeting the needs of our customers.

THE BART CUSTOMER EXPERIENCE

BART's overarching customer service vision is that, *"the transit riders and residents of the San Francisco Bay Area regard BART and its transit partners as providing seamless, safe, reliable and customer friendly transportation services, and will consider themselves stewards of the system."* BART has many projects underway and planned to improve the quality of the customer experience, thereby fostering customer stewardship.

In order to maintain BART's performance standards, and thereby sustain customer satisfaction, the District must maintain the safety, reliability and cleanliness of the physical infrastructure with which its riders come into contact. The most critical piece of infrastructure is BART's trains. BART's largest renovation project, the A & B Car Renovation project, is a full-scale overhaul of the original fleet of twenty-five year old train cars. The renovated cars will improve the reliability of the system through reduced unscheduled maintenance and repair. In addition, new carpeting, seats and handrails will replace the existing equipment in the cars, improving the comfort, cleanliness and appeal of the car interiors.

BART will continually improve customer satisfaction by maintaining performance standards and providing quality customer service.

In addition to the renovation of BART's original A & B cars, BART is also implementing a mid-life overhaul of its ten-year old C-1 cars. While not a full renovation, this overhaul will replace equipment pertaining to passenger comfort, such as the air conditioning system, carpets and seats, as well as equipment that affects reliability, including car doors and propulsion and brake systems.

Another key piece of infrastructure that directly impacts customer satisfaction is BART's fare equipment. BART's Automatic Fare Collection Equipment Modernization / Translink Implementation (AFC / Translink) project will renovate and/or replace every faregate, ticket vendor and addfare machine. It will also upgrade BART's data collection system, which enables the District to monitor ridership and other data essential for service planning. The successful completion of this project will improve the reliability of the fare equipment, facilitating the flow of customers through the stations. In addition, the upgraded data acquisition system will enable BART to fine-tune service planning to accommodate changing ridership patterns in the region.

A critical piece of the District's delivery of good service to BART customers is its coordination with other transit providers in the region. For many years, the District has worked closely with connecting bus services to improve the intermodality of BART stations by adding bus handling capacity, improving traffic flows and providing more rider amenities. BART's intermodal station projects currently underway and planned include the West Oakland, Fruitvale, Coliseum, South Hayward, and Union City stations. Intermodal improvements have already been completed at the Richmond, El Cerrito Del Norte, El Cerrito Plaza, Fremont, Hayward, Concord and Walnut Creek stations.

BART will maximize regional transit access, convenience and ease of use through effective coordination among transit providers.

The AFC / Translink project will provide passengers transferring between BART and other transit operators with a single, "universal" fare mechanism. This will greatly improve the convenience and efficiency of intermodal transfers.

BUILDING PARTNERSHIPS FOR SUPPORT

As a multi-county transit provider, BART understands that it must work within its constituent communities in order to provide optimal service in the region. The Strategic Plan identifies "Building Partnerships for Support" as a significant area of concern. BART's vision in this area is the following: *"As an indispensable resource to the Bay Area's quality of life, BART will take a leadership role working with diverse stakeholders to promote effective transit policies and political support for regional transit initiatives."*

Public input is a central tenet of BART. Board and Board committee meetings are open for public participation and comment. Moreover, Board and staff members frequently participate in community meetings and hold community forums to solicit public feedback.

BART will encourage and consider public input as integral to sound, balanced policy development and decision-making, and make deliberate, disciplined decisions in the best interest of the people it serves.

With 39 stations located in 20 cities, BART connects four counties by rail and facilitates links with more than a dozen other transit operators in the region. Numerous public opinion polls and ballot measures clearly indicate the high regard in which BART'S constituent communities view the District. It is one of the District's goals to continue to provide significant and unique value to the Bay Area. This can best be accomplished by continuing to deliver a capital program focused on system reliability, renovation and prudent expansion.

Residents of the Bay Area will value and take pride in BART as an integral part of their communities.

BART has always worked closely with the Federal Transit Administration (FTA), the California Transportation Commission (CTC), the Metropolitan Transportation Commission (MTC), congestion management agencies (CMAs), cities and counties, other transit operators in the region and community organizations to identify and pursue regional transit and local community needs as they involve BART. BART Board members, themselves, represent the diverse transit needs of their geographical electoral districts in Alameda, Contra Costa and San Francisco counties.

BART will be viewed by stakeholders as a credible, trustworthy steward of the system we manage and operate, focused on improving our value to the riders and the communities it serves.

In recent years, partnership building has become increasingly important to BART. The development of the Strategic Plan itself involved members of funding agencies, other transit agencies, local government, local non-governmental organizations and the community. Each participant contributed significantly to the strategic planning process and to the areas of concern and visions embodied by the Strategic Plan.

Key elected officials, opinion leaders and decision-makers will understand and actively support transit needs and initiatives.

TRANSIT TRAVEL DEMAND

Like all other transit agencies, one of BART's most critical efforts is the attraction and retention of customers. It is in the best interest of the entire Bay Area, transit riders and drivers alike, to maximize transit ridership. Not only does it reduce automobile traffic damage, but it also reduces congestion on streets and highways. The Strategic Plan asserts as one of its visions that *"the BART system will be used to its fullest potential, maximizing transit ridership in order to enhance the Bay Area's quality of life."*

BART's Data Acquisition System (DAS) is critical for monitoring ridership and compiling data necessary for efficient service planning. The AFC / Translink Project will overhaul the DAS system, updating it with current technology for greater accuracy and improved features.

BART will work to understand and be prepared to respond to changing transit demand patterns, and proactively to influence travel demand trends in the region that support transit ridership.

Another way to maximize transit ridership is to optimize existing capacity. Towards that end, BART is working with local communities and other entities to improve off-peak (reverse commute and non-commute) demand for transit. Currently, BART and its partners are planning and implementing several station area development projects intended to improve the environment at BART stations and to create destinations during off-peak hours. These projects include the Fruitvale Station Development Project, which will redevelop the station to include a pedestrian plaza, a childcare facility, and a parking structure. The Mission Street Corridor Revitalization Project will improve the safety, aesthetics and public amenity of the 16th Street/Mission Station Plaza by implementing a community-developed plan. The Community Design Plan will install new and enlarged bus shelters for more comfortable transfers between transit options and implement such enhancements as lighting, paving, landscaping, benches and the removal of barriers to improve pedestrian circulation.

BART will optimize the use of existing capacity.

BART's Advanced Automatic Train Control System (AATC), the result of significant research and development by the District and private sector partners, will enable BART to operate trains at closer headways, significantly increasing passenger capacity without additional vehicles.

In addition to improving and extending the BART system to optimize transit travel demand, the District is also planning and implementing projects that aid travel to and from BART stations. The many planned and completed transit center projects improve traffic circulation and enrich the passenger experience by upgrading bus waiting and loading areas, providing weather protection and other amenities. BART also has several projects designed to improve bicycle and pedestrian access, including electronic signage, improved sidewalks and accessible pathways, bicycle paths and bicycle storage.

BART will encourage and facilitate improved access to and from our stations by all modes.

BART will work to close the gaps in regional rail services between major populations and employment centers and/or corridors.

In addition to pedestrian and bicycle access, BART has developed "CarLink," a new car sharing/station car program that builds on the concept of "car sharing." Station cars are automobiles that are each used by several BART riders per day to provide access and egress to and from stations. "CarLink" was launched in February 1999 at BART's Dublin/Pleasanton station using twelve compressed natural gas cars. Soon BART will have station car services provided by rental car companies, using gasoline cars. One BART customer will drive the car from home to the station. Another BART customer will drive the car from the station to the work site. At the work site the car will be used as a corporate pool car. This will maximize the productivity of BART's constrained supply of parking at stations. With revenue coming in from each of the several daily users, the station car market could become a major new opportunity for the rental car industry, as well as a mode for enhanced access to transit.

One of BART's missions is to provide service, in conjunction with all regional transit operators, to as much of the region as is technically and financially feasible. To further maximize transit travel demand, BART has extended its system by five new stations and 23.5 miles of additional tracks within the past ten years, so that it is available to increasing numbers of riders.

BART's extension program is intended to open up new markets, as well as to provide critical linkages where there are current gaps in the regional transit system. The BART-SFO Extension will enable residents and visitors throughout the region to take public transit to San Francisco International Airport for both employment and air travel. This will provide a high-speed, high-capacity rail transit connection from one of the world's busiest and fastest-growing airports to San Francisco and all of the urban centers of the East Bay. The planned Oakland Airport Connector project would likewise provide a fast, high-capacity link between that airport and the BART mainline. The planned Warm Springs/Santa Clara Phase I Extension would bring BART's Fremont line further south to begin closing the gap in high-speed transit between BART and the rapidly growing South Bay / San Jose / Santa Clara / Silicon Valley area.

LAND USE AND QUALITY OF LIFE

BART both impacts and is affected by the communities in which its stations are situated. As an influential component of the community, one of BART's areas of concern is land use and quality of life. The vision that defines this concern is *"in partnership with the communities it serves, BART's properties will be used in ways that first maximize transit ridership and then balance transit oriented development goals with community desires."* BART seeks to be responsive to the needs of communities in the Bay Area by optimizing the use of its properties and by working intensively with local communities to keep the BART properties within them safe, useful and attractive.

BART is involved in several station area projects regarding transit-oriented development, livability and vitality improvements and pedestrian, bicycle and disabled access. At the Fruitvale Station, BART worked closely with the Fruitvale Development Council and the Unity Council to develop a station area plan, which will redevelop the station to include a pedestrian plaza, improved physical linkages to the surrounding community, a childcare facility and a parking structure. This plan is now being jointly implemented.

In partnership with the communities it serves, BART's properties will be used in ways that first maximize transit ridership and then balance transit oriented development goals with community desires.

The Mission Street Corridor Revitalization Project involved many community organizations, including the San Francisco County Transportation Authority (SFCTA), Mission Housing and Urban Ecology. BART and the SFCTA have recently received a grant to implement the first phase of the Community Design Plan, including reconstruction of the southwest BART plaza. The Community Design Plan is a community-developed blueprint for creating a safer and more vibrant public space at the 16th Street Mission Station. BART is also working with the Mission Economic Development Association on a similar community plan for the 24th Street Mission BART Station.

In partnership with communities, we will promote transit ridership and enhance quality of life by encouraging and supporting transit oriented development within walking distance of BART stations.

In cooperation with the City of Concord, downtown streetscape upgrades and pedestrian improvements will be implemented to improve the linkage to BART. Other station area development concepts are currently in the planning stage, and are seeking funding for projects at 24th Street/Mission Station and Balboa Park Station in San Francisco, and in Oakland, Berkeley, Richmond, and San Leandro.

PEOPLE OF BART

BART was conceived in 1968 as a technical marvel, a transit system on the cutting edge of high technology. However, BART could not operate without the dedication and competence of its more than 3,000 employees. Hence, one of BART's most critical visions is that *"BART will be a professional, caring organization dedicated to meeting the needs of our customers."* The District's "front-line" employees provide a vital service to BART customers, providing information and assistance in the stations and operating the trains in a safe, comfortable manner. Others maintain the facilities and equipment so that the system operates safely, reliably and efficiently. Other BART employees look to the future of BART, implementing renovation and replacement and designing the prudent expansion of the BART system. They monitor BART's fiscal status, ensuring compliance with financial rules and regulations, forecast BART's financial performance and funding requirements and pursue funding.

BART's commitment to its employees is longstanding. BART has implemented several projects designed to improve the safety and comfort of the environments in which employees work. For example, the District recently enlarged and upgraded its transportation buildings, improving employee amenities. In addition, the renovation of the Richmond maintenance yard is designed to improve the safety of BART employees. Another BART project will improve the comfort of employee facilities throughout the system.

BART will have an organizational culture that respects, values and empowers employees and puts customers first.

In order to support employee morale and productivity, annual allocations are made for the replacement and upgrading of capital equipment and tools, for system maintenance, staff training and development, and administrative functions.

BART will attract, train, retain and provide job enrichment and career growth to a dedicated and competent workforce.

BART will create a welcoming and supportive environment for all employees.

PHYSICAL INFRASTRUCTURE

Rail systems are highly capital intensive. The BART system is composed of trains, track, stations, maintenance facilities and other physical infrastructure. Each piece of infrastructure and equipment has a discrete useful life. Proper renovation and replacement are necessary to maintain the level of safety, reliability and cleanliness that are BART standards. The Strategic Plan denotes that one of BART's visions is that *"our infrastructure and equipment will be maintained in a condition that enables us to supply high-quality, clean, safe, reliable and customer friendly transportation."*

Much of the original BART equipment is reaching the end of its design life. Therefore, BART has committed to a comprehensive renovation and replacement program. The first increment of this plan was embarked upon in 1995 when BART commenced its first phase Systemwide Renovation Program. This program now totals $1.571 billion, and includes the complete overhaul of the District's 439 original cars, and the replacement or overhaul of all major systems such as power, train control, communications and maintenance facilities. Station renovation is currently focused on overhaul or replacement of escalators, elevators and automatic fare collection equipment.

> We will make annual investments in maintenance and repair of our physical infrastructure sufficient to support safety, cleanliness, reliability, train performance and customer friendliness.

> We will meet the demands of our customers and we will assure the long-term viability of BART by continuously re-investing in our aging infrastructure so as to maintain its functional value.

As BART carries ever more passengers ever longer distances, the trains need increased maintenance and repair. Recognizing this heightened need, BART has initiated a comprehensive shop improvements program, which will enhance the capacity of BART's Concord, Hayward, Richmond, and Daly City maintenance facilities.

Renovation is a continuous process in a mature transit agency, not a one-time expense. In order to continue providing the highest possible levels of service to an ever-growing customer base, BART must continually plan for further reinvestment. Certain capital investments must be made regularly to maintain the integrity of the BART system. As a result, BART has developed on-going rail replacement, train control and traction power programs which annually fund renovation and replacement of BART's track, train control system and the electrical power system that propels the trains.

> Insure that infrastructure and maintenance capacity supports the planned level of service. At the same time, provide the infrastructure flexibility to support the planned level of service value.

This *Capital Improvement Program* also includes a Track Two renovation program, currently unfunded, which will be necessary to implement over time to meet ever-increasing demands for more service.

FINANCIAL HEALTH

BART has set the standard for fiscal prudence and financial health. It continues to be one of BART's central visions that *"we will know where we are and where we are going financially. Our operating and capital revenues and expenses will be balanced, predictable, sustainable, and sufficient to meet standards and goals."* BART performs extensive and comprehensive financial analyses and projections annually in which the District reviews its historical performance and uses its past performance and knowledge and understanding of current financial trends to forecast future performance.

The District has sought, and continues to seek, to keep BART rider fees reasonable and competitive with other transportation options within the Bay Area, the state and the nation. BART provides value by focusing on the safety, reliability and cleanliness of the BART system and by working with local communities and other stakeholders to address the needs of riders and the region.

> We will remain a transit service that is competitive in terms of value (i.e., quality for price) for the people we serve.

It has long been one of the District's objectives to share costs among those who benefit from the BART system. BART is an asset not only to its riders, but to the region, the state and the nation as well. BART provides a viable transportation option to many in the Bay Area, and, in so doing, reduces congestion on streets and highways and contributes to the preservation of the environment. Thus, historically, BART capital revenues have come from multiple sources, including, but not limited to, federal and state grants, local sales tax revenues, local property tax revenues and passenger revenues. By relying upon a diversity of revenue sources, and through prudent management of existing resources, BART has been able maintain financial stability.

> We will maintain and improve the stability of our financial base.

BART works closely with the Metropolitan Transportation Commission (MTC) and other regional transit partners to advocate for grant funding. Together, BART and its partners develop regional funding plans, designed to meet the most critical transit needs of the region. These partnerships enable BART to more effectively pursue grants with the Federal Transit Administration and the California Transportation Commission.

> We will work with our regional transit partners to advocate for funding needed first to sustain existing transit services and infrastructure reinvestment, and then to pursue prudent expansion.

> Our financial choices will be guided by prudent fiscal policies and by reliable, useful revenue and expense forecasts and plans.

BART's judicious financial planning enables the District to predict with a degree of certainty its financial performance and capacity from year to year. BART relies upon this financial stability and capacity when it borrows against future revenues to deliver the necessary capital program in a timely manner. Fiscal prudence has enabled BART to enjoy extremely high credit ratings, borrow at relatively low interest rates, and thus minimize interest debt.

Much of BART's physical infrastructure has a useful life of twenty years or greater. However, BART's *Capital Improvement Program* projects only ten years of the District's capital needs. As BART has become a mature system with regular and forseeable renovation needs, it has become clear that the District must engage in longer term capital planning in order to ensure that critical renovation needs are met. Therefore, BART is embarking upon the development of a Thirty Year Capital Plan. This plan, when completed, will focus on BART's long range capital objectives and financial needs. The plan will be used to estimate BART's capital requirements over thirty years and will feed into the MTC's regional, long-term planning document, the Blueprint for the 21st Century.

Chapter Three: The Content

PROJECT DESCRIPTIONS, STATUS AND HIGHLIGHTS

INTRODUCTION

This chapter provides detailed descriptions of many of BART's 279 capital projects by capital program. A significant portion of the capital program is centered on the renovation and replacement of the District's existing physical infrastructure. The District faces increasing pressure to preserve the BART system as its infrastructure ages. The A and B car renovation, which completely rehabilitates BART's 439 original transit vehicles, is already underway. This project will greatly improve the reliability, safety and comfort of 80% of the District's revenue rail vehicle fleet.

As part of the District's commitment to continuous renovation of critical components of the system, BART has three ongoing projects – rail replacement, traction power renovation and train control renovation – which are funded with a combination of federal grants and BART funds. Renovation in these areas is critical to maintain BART's operating performance and safety standards. The District also has several renovation projects underway in its stations, including the rehabilitation and replacement of elevators and escalators systemwide, the renovation and replacement of fare collection equipment systemwide and accessibility improvements throughout the system. These renovation projects will facilitate BART passenger entrances to and exits from the system by improving escalator, elevator and faregate reliability and ameliorating pedestrian, bicycle and disabled access to BART stations. More detailed descriptions of the District's renovation, rehabilitation and replacement projects follow in the section of this chapter entitled *Systemwide Renovation Program.*

In addition to the upkeep of the system, BART's increasing ridership necessitates investments in upgrades, improvements and prudent expansion of existing facilities in order to maintain consistent and reliable service, to improve passenger comfort and to retain high safety standards. The District's commitment to on-time performance and customer service constantly motivates BART to pursue improvements, modifications and augmentations to the existing system. As BART rail cars traverse more miles and carry more passengers, they require more frequent maintenance and repair. As a result, several projects are in development to augment the capacity of the District's maintenance facilities. One way BART continues to add value to its customers is by working with other transit operators in the Bay Area to facilitate transfers between transit modes. Towards this end, the District has completed several intermodal projects at BART stations, and is implementing several more. The section of this chapter entitled *Service Improvements Program* contains more detailed descriptions of the District's system improvement and upgrade projects.

BART's earthquake program, further described in the section of this chapter entitled *Seismic Retrofit Program*, is designed not only to maintain the structural integrity of the system during and following a major earthquake, but also to enable the District to continue to operate after such an event. The core of program is the "Lifeline" Program, which is planned to preserve transbay service. The Caltrans Local Seismic Retrofit Program, currently under joint study and development with Caltrans, will strengthen BART's aerial structures located over highways, streets and roads up to BART's serviceability standards. Other segments of the program will retrofit the remainder of the system and BART facilities.

While BART is first committed to preserving the existing system, the District is also dedicated to providing additional needed service to the Bay Area. Over the past several years, BART has extended the system to Dublin/Pleasanton, Pittsburg/Bay Point and Colma. Currently, a BART extension to the San Francisco International Airport (SFIA) is underway. This extension will enable residents on both sides of the San Francisco Bay to travel via public transit to SFIA. Moreover, the extension will include a direct connection between BART and Caltrain. This will enable an East Bay rider from any point on the BART line to travel across the Bay and down the Peninsula to San Jose with only a cross-platform transfer at the Millbrae intermodal station. Further description of the completed extensions, the underway BART-SFO Extension and other potential future extensions can be found in the section of this chapter entitled *Extensions Program*.

The District, as a technology-reliant agency, must have a strong research and development (R&D) effort in order to optimize the performance and service of the BART system. BART's R&D group has designed advanced and highly useful technology that cost-efficiently improves the BART system. One prominent example of technology developed by BART's R&D group is the Advanced Automatic Train Control (AATC) system. This system, now being implemented, will enable trains to operate at closer headways, optimizing the capacity of the BART system. While AATC has been incorporated in the District's train control renovation program, other leading edge technological investigations are currently underway. The section of this chapter entitled *Research, Development and Demonstration* further outlines this program.

SYSTEMWIDE RENOVATION PROGRAM

Making Progress in Renovation

BART is meeting the challenge of renovating and renewing its existing physical infrastructure. By 1995, after more than 20 years of service with the original equipment, BART had developed an initial phase program of systemwide renovation, forecast to take up to ten years to complete, at an estimated cost of $1.1 billion. Also by 1995, the District had developed a realistic financial plan for the program anchored by substantial grant funding and supplemental, necessary fare increases to generate a major share of the required funding internally.

The good news for BART customers is that in 1999, only four years into the ten-year program outlined in 1995, 53 of 186 renovation projects have already been successfully completed and 51 more of those projects are underway. One of the first projects completed was the replacement of seat covers, upholstery, and carpet in 100 of BART's oldest rail cars. Sixteen stations have undergone a major program of intensive cleaning, painting, repairs to equipment and structures, and refurbished landscaping. Many other recent improvements are also readily noticeable to BART riders, such as the replacement of twenty-three escalators in downtown San Francisco stations, the addition of thirty faregates to improve passenger flow, improved accessibility for disabled customers, significant station safety and security improvements, installation of BART ticket machines that accept credit and debit cards, the replacement of the old bus transfer ticket dispensers in the East Bay stations, and the replacement of old bicycle lockers. These projects were designed to improve the quality of transit for BART passengers. Less visible projects include several intended to improve the system's long-term operational reliability.

Remaining Challenges in Renovation

BART has made significant progress in the renovation program, yet challenges remain. On the program delivery side, the challenge is to optimize the use of the funds that will come in over the next several years in ways that maximize the benefit to BART riders. From the perspective of BART riders, Fiscal Year 2000 will be marked by several highly visible milestones intended to improve the ridership experience. By the end of Fiscal Year 2000, up to 150 of BART's oldest railcars will have been completely renovated and returned to service. This renovation includes interior furnishings, heating and cooling systems, electrical, mechanical and propulsion systems. The complete overhaul of all BART station elevators is forecast to be completed by the end of Fiscal Year 2000. About one-third of the station escalators should be overhauled as part of a program to complete them all by Fiscal Year 2001. Four stations will undergo thorough facilities refurbishment in Fiscal Year 2000. Major progress is projected for the Automatic Fare Collection Equipment Modernization / Translink Implementation Project, as well as reliability improvements in the train control and traction power systems.

Rolling Stock Renovation Program

The purpose of this program of projects is to replace and renovate those components and subsystems of BART's rolling stock that have deteriorated or are susceptible to malfunctions. Aging rolling stock has high associated maintenance costs and reliability problems and is a significant factor in service disruptions. Rolling stock renovation will prevent major disruption and delays in revenue service, as well as extend the useful life of BART's revenue vehicles. Four of the seven Track One projects in this program are completed, with two additional projects, including the A & B car renovation and the C-1 car midlife overhaul, underway.

Projects Completed

Replace Electrical Couplers on C-1 Cars

The old "pin-type" inter-car electrical couplers were a very high maintenance item. Conversion to "button-type" couplers between cars has reduced maintenance requirements and car out-of-service time.

Replace A- and B-car Door Components

In the past, malfunctions of the door systems on A- and B-cars were a major factor in service disruptions, and as such were addressed earlier than could have been accomplished through the current car renovation program. One problem was expansion of the foam comprising the door core, which then delaminated the door structures and caused the door to jam. Corroded door suspension rails also contributed to door failures.

Replace Batteries on A, B, and C-1 Cars

The transit vehicle fleet is equipped with batteries to supply power for lights and operating controls for a limited time when the auxiliary power supply equipment or motor alternator loses electricity or fails. Good batteries allow the train to continue to the end of the line after experiencing a motor alternator electricity loss or failure. For reliable service, train car batteries need to be replaced with new batteries every 10 to 13 years. This project has helped to ensure reliable back-up power by replacing 400 aging batteries on A, B, and C-1 cars. In addition, all new batteries have been placed on a time-controlled maintenance and replacement program. Batteries will be reconditioned after five years of service and replaced after ten years.

In addition to the above-described projects, the wheel upgrade program has been completed.

Projects Currently Underway

A- and B-Car Comprehensive Renovation

The renovation of the District's original fleet of A- and B-Cars is essential to enable BART to continue to provide for current and future service demand levels. The District has one of the oldest average fleet ages in the transit industry. Before commencement of the A- and B-Car Renovation Program, these 439 cars had never been comprehensively overhauled during their 25-year lives. This project incorporates all elements of complete reconstruction – it will replace worn out and obsolete components and return the vehicles to their original design specifications. Systems being replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting. The renovation is intended to add twenty years of service life to the cars, improve their reliability, and bring them into compliance with the requirements of the Americans With Disabilities Act (ADA). The cost of remanufacturing vehicles is estimated at approximately 50 percent of the cost of new cars. The following is a photograph of a renovated car in revenue service. Improved lighting, better handrails and more attractive, stain-resistant seat upholstery and carpets are some of the notable passenger comfort improvements.

Midlife Overhaul of C-1 Cars

The overhaul of C-1 vehicles at the mid-span of their design life will reduce future maintenance costs and greatly improve the reliability of the cars, encouraging additional BART ridership. This project will replace deteriorated floor panels and carpets, recondition car doors, upgrade the vehicle interiors, and overhaul and upgrade the air conditioning, propulsion and brake systems.

Track Two Projects

C-1 Car Comprehensive Renovation

The C-1 cars that went into service in the late 1980s will approach 20 years of operation by the end of this planning period. Ideally, these cars should begin a program of complete renovation, similar to that now underway and described above for the A- and B-cars, in the 2008-2009 timeframe.

Install Automatic Train Control Restoration Units

Failure of the on-board vehicle automatic train control (ATC) system, in addition to the wayside ATC, is one of the major causes of service disruption. This project is a retrofit of the existing systems, which will provide two valuable functions. First, the new units will dramatically speed recovery from such failures, thereby quickly returning to service temporarily disabled trains. Second, the new systems will capture and record critical information about failures, improving the efficiency of maintenance.

Security Camera Installation on Transit Vehicles

This project would purchase and install security surveillance cameras on the entire transit vehicle fleet.

Fleet Upgrades

Similar to the C-1 Car Midlife Overhaul project described above, the rest of the BART fleet will benefit from periodic renovation to systems and passenger comforts, in order to maintain BART's reliability and customer service standards.

Mainline Renovation Program

The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline that have deteriorated, or will deteriorate in the next ten years, due to age and use. Many components of the trackway and traction power systems are over 25 years old, and are failing with increased frequency. These systems must be reconditioned or replaced in order to maintain reliability and avoid service disruptions. Mainline renovation will prevent rail and traction power failures that would cause disruption and delays to revenue service. Of the 25 Track One projects in this program, nine are completed and seven are underway.

Projects Completed

Recoat Tunnel Liner Rings for Corrosion Protection

The steel rings that line BART tunnels must periodically undergo heavy maintenance, including removal of corrosion encrustation, sandblasting, and a reapplication of corrosion-resistant coating. A phase of this essential work was completed recently in order to avoid further corrosion and consequent structural deterioration and weakness.

Replace Dry with Wet Standpipes

This project replaced dry standpipes with wet (water-filled) standpipes for improved fire-fighting capability and response time to increase passenger safety.

Track Embankment Upgrade

This project permanently enhanced and upgraded approximately 4600 linear feet of track embankment between the Union City and Fremont Stations. The embankment had been damaged by erosion and soil slippage. Improvements included rip rap (large boulders) and geosynthetic reinforcement to stabilize the embankment and create positive drainage, which will prevent future damage from occurring.

Transbay Tube Cathodic Corrosion Protection

The cathodic protection of the Transbay Tube protects the outer steel liner of the tube from corrosion. This works by forcing current at various locations along the tube into sacrificial anodes that prevent most of the corrosion of the liner. The original anodes lasted only four years or so, but with the application of modern applied engineering techniques and materials, the useful lifespan of anodes has been increased to eight to ten years. Therefore, this cycle must be repeated every eight to ten years. One such cycle is currently approaching completion.

This project includes several activities associated with cathodic protection that ensure continual and optimal functioning of the system. The anodes and cables for cathodic protection are replaced and measurements taken to determine the amount of corrosion occurring. The location and sites of the anodes and the cables are shown on shipping charts; yet, quite often the cables from the anode to the tube are dragged and damaged by ships dropping anchor. Locating and replacing the Transbay Tube anodes and cables in up to 100 feet of water and 25 feet of mud requires experienced divers and special equipment. In addition, there is cathodic protection on the BART Vent Structure in San Francisco and on the San Francisco Ferry Building for which BART is responsible due to foundation modifications made necessary by the construction of the Transbay Tube.

Rehabilitate Subway Ventilation Line Fans

This project replaced all the old ventilation fan blades in tunnels and subways throughout the system. This work was required to upgrade the ventilation fans that are used for emergency passenger evacuation and for maintenance crews working in the subway sections. In the past, fan failures resulted from cracks that have developed over time in the blades, causing the blades to fail. To the right is a photograph of ventilation fan blades replacement.

Repaint Structural Girders and Bridges

The BART bridges and aerial structure girders recently completed their first complete repainting since their construction in the 1960s and early 1970s. This work was essential to avoid additional corrosion and subsequent structural deterioration and weakness.

Asbestos Abatement

The 1989 Loma Prieta earthquake damaged the asbestos insulation in train control electronics rooms at various locations around the District. Maintenance personnel were able to enter these rooms only when fully protected against potential asbestos exposure, making such maintenance much more difficult, time-consuming, and expensive. This project removed the asbestos-containing material from these areas.

Replace Sump Pumps in Subway Tunnels

The ability to pump water out of subway tunnels is critical to keeping the system safe and reliable. This project replaced 33 aging sump pumps with new submersible-type pumps at 16 different locations systemwide. Also, oil skimmers were installed at each sump because the effluent is pumped directly to municipal storm drainage systems.

In addition to the above-described projects, BART has also completed its Berkeley Hills Tunnel Fire Protection Modifications project.

Projects Currently Underway

Replace Running Rail and Accessories

This on-going project periodically replaces curve-worn rail and switch components in high-density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require replacement on a three- to five-year cycle.

Traction Power Equipment Renovation

This long-term program is rehabilitating a wide range of traction power components and subsystems that are aging and deteriorating, leading to lower reliability and higher potential for service disruption. Several traction power system renovation projects are well underway to address the District's immediate needs. These critical needs include the strengthening of third rail coverboards, the removal of asbestos from the 1000 volt breakers, the replacement of unreliable surge suppression equipment, the repair of worn-out 34.5kV cables, replacement of 34.5kV breakers and the upgrade of 1kV breakers. Other individual projects include rectifier reconditioning and the replacement of grounding systems, dielectric liquids in power transformers, traction power control batteries, switch enclosures and gas-pressure pipes.

Replace Traction Power House Roofs

Traction power substations throughout the BART system have been identified as being in poor structural condition and are currently under repair. The roofs are constructed of steel decking and, in some cases, are rusting through. Water incursion into substations can result in traction power failures and serious service disruption.

Right-of-Way Fencing

Wherever BART tracks run on the surface at grade, the length of the right-of-way is fenced to prevent unauthorized and unsafe access to the trackway. This fencing must be replaced periodically due to normal deterioration or vandalism. This critical safety project is currently underway.

Track One Future Projects

Replace Running Rail and Accessories

This on-going project periodically replaces curve-worn rail and switch components in high-density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require replacement on a three- to five-year cycle.

Traction Power Equipment Renovation

The traction power system of the original system has been in continuous service for over 25 years. BART can expect future reliable service if continuous reinvestments are made in renovation of the key elements of this vital system. The current traction power system renovation projects are well underway and principally address the District's immediate needs. The next phase of renovation would continue to replace equipment that has reached the end of its service life and address the increasing power requirements of closer train headways. The following subprojects are proposed: replace and add transformers/rectifiers at key substations, replace transfer trip system cables, replace 1000 volt DC breakers, add 34.5kV cabling for system redundancy, and add redundancy for station power.

Transbay Tube Cathodic Corrosion Protection

This project, described above in the *Projects Completed* section, must be repeated about every ten years.

Tunnel Ventilation

In case of a fire within BART tunnels, the District maintains a series of fans and other equipment to aid evacuation and suppression of the fire. A Track One project replaced all the old ventilation fan blades in tunnels and subways throughout the system. However, these new blades will themselves have to be replaced when they wear out in several years. This program will continue the phased rehabilitation of this equipment started in the completed Track One project.

The underground sections of BART have 74 ventilation fans to control the flow of smoke and to provide fresh air for evacuation in the case of an underground fire emergency. In addition, this equipment is routinely run for minor smoke evacuation, cooling of underground stations and to supply fresh air to BART maintenance personnel while working wayside. BART's current Renovation Program recently replaced fan motors and blades that have been determined by testing to have been at, or near, the end of their service lives. This project continues an aggressive on-going program to ensure that this safety critical equipment is reliable and operational at all times.

Another critical aspect of BART's ventilation design is the rolling steel doors mounted at the east portal of the Berkeley Hills Tunnel. These doors are closed in the case of a fire to ensure that ventilation fans will properly direct the smoke. These doors are 25 years old and in need of replacement. This program will replace these doors.

Lake Merritt Channel Subway Repair

The subway just south of the Lake Merritt Station was constructed under the Lake Merritt Channel and has been leaking for a long time. Repeated attempts to seal the leaks have only partially mitigated the problem. Salt from brackish water intrusion, picked up and sprayed by passing trains, has caused corrosion in the reinforcing steel that in turn is causing damage to concrete components of the subway. This project will seal the subway to stop water intrusion through the subway walls, top slab and bottom slab, remove damaged concrete, remove corrosion from steel reinforcing bars, and apply new concrete to damaged areas to restore structural elements to their original strengths.

Repaint Steel Girders for Corrosion Protection

The steel girders that were installed in the system's original construction have not been painted in more than 20 years. Inspections have revealed that the original paint has deteriorated with signs of corrosion in the steel surfaces. Funds were allocated for the repainting of these girders and a three-phase program was implemented. However, nine original bridges were taken out from the last phase so that the more badly corroded John Daly, Junipero Serra and Washington bridge girders, which were installed in the Daly City Turnback Project, could be repainted. A follow-up project is needed to complete the program. This project will remove the original coats of paint and apply new prime and finish coats that will protect the girders against corrosion in the following bridges for the next 30 years: 105th Avenue, Halcyon Avenue, 55th Street, Telegraph Avenue, Hudson

Avenue, Pleasant Hill Road, North Main Street, Walnut Creek Channel and Marine Avenue.

In addition to these future Track One projects, the District plans to upgrade its emergency standby power system.

Track Two Projects

Track Two Mainline Renovation projects include the replacement of dry standpipes at I-680 and Springbrook crossings and the removal of gaps in emergency handrails and of obstructions on emergency walkways.

Station Renovation Program

The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. Track One of this program consists of 49 projects, 20 of which are completed and 16 of which are underway, including Automatic Fare Collection Equipment Modernization / Translink Implementation.

Projects Completed

Accessible AFC Equipment

This project brought the BART Automatic Fare Collection ticket vending equipment into compliance with current accessibility requirements. This project added automated voice guidance to numerous fare-card vending machines and developed a prototype new swing gate to facilitate wheelchair access.

Stations Security Program

This project increased the illumination levels of surface parking lots, added emergency police call boxes in parking lots, and provided decentralized satellite police station structures to accommodate community-based deployment of BART police forces to increase passenger security.

Repair Concrete Roof of Lake Merritt Station

This project repaired the structurally deteriorated concrete roof and replaced the waterproofing material over a portion of the mezzanine level of the Lake Merritt Station under Oak Street. The damaged concrete roof caused water leakage in the south stairway area, making it necessary to close the stairway whenever it rained. Implementation of this repair work restored the structural integrity of the concrete roof and now provides safe and uninterrupted passenger access between mezzanine and platform levels.

Refurbish and Install In-Storage Faregate Units

The District withdrew 30 faregate units from long-term storage and refurbished them to current standards. They were then installed at various BART locations where additional exit faregates were required due to increasing BART system usage.

Replace Bicycle Lockers

The original bicycle storage lockers at various BART stations had deteriorated to the point of not providing an acceptable level of security and weather protection, and have been replaced with current state-of-the-art bike lockers.

Credit-Debit Vendors

This project is providing new fare-card vending equipment in a number of high volume stations to permit the sale of high value fare-cards charged to credit and debit bankcards.

Replace Maps and Signs in Stations

This project updated and replaced outdated maps and transit information displays in all BART stations. The replacement was required to reflect the new extension stations and to update local transit information. This project provides a graphic display system that is more flexible and more easily updated than the old maps, which had not been updated since they were originally installed in 1972.

Replace Station Roofing

The roofs of stations and weather protection canopies deteriorate with age and exposure to the elements. In order to protect passengers from potential slipping hazards, protect equipment and furnishings, and avoid structural damage, roofing was recently replaced at four BART stations.

MacArthur Station Emergency Exit Upgrade

The District is obligated to ensure that station exiting times are in compliance with the standards cited in the District's 1988 agreement with the California Public Utilities Commission (CPUC). BART had been in compliance until 1995, when platform occupancy loads increased with ridership growth. This project created emergency evacuation paths at MacArthur Station, from the end-of-platform gates at the south end of both platforms to the gap breaker station at MacArthur Boulevard, in order to mitigate an existing safety concern. The new evacuation paths were constructed in accordance with ADA guidelines. Based on computer models created by the BART's Safety Department, the new emergency evacuation paths will ensure compliance with CPUC standards once again.

Repair Stair Tread Edges and Replace Anti-Slip Treatments

The anti-slip treatment originally applied to help protect passengers from slipping and falling on station stairs has worn away in many locations throughout the District. This treatment has been renewed at several stations in order to protect the safety of passengers, especially during wet weather conditions.

Replace Sewage Pumps in Underground Stations

Sewage from bathrooms in underground stations must be pumped up into the city sanitary sewer collection system. The existing pumps had been in place since the BART system opened 25 years ago. They were increasingly unreliable and uneconomical to maintain. These pumps must be functional and were replaced as a matter of passenger convenience and public health.

Other completed Station Renovation projects include: Security Gates at South Hayward Station, Replace Fire Mains at Fremont/Oakland Line, Replace Agent Ticket Readers and Replace Station Fire Alarms.

Other completed projects include the replacement of security gates at some stations, the replacement of station fire alarms and the development of a bill-to-bill prototype.

Projects Currently Underway

Automatic Fare Collection Equipment Modernization / Translink Implementation

The Automatic Fare Collection (AFC) equipment in the BART system is approaching 25 years old and, therefore, is difficult and costly to maintain. This project will replace all ticket vendors, addfare machines and Cubic faregates, and recondition the IBM faregates. The project needs to be done in order to decrease revenue collection and maintenance costs through the use of more modern servicing modules, increase revenue security and accountability through the use of sealed coin and bill units, implement an upgraded Data Acquisition System, and increase equipment availability for customers. The urgency of the project is driven by the need to capture maintenance and security benefits, while avoiding deterioration of customer service levels as the existing equipment approaches the end of its useful service life. An additional need for this project stems from the regional multi-operator Translink "Universal" ticket program that will be integrated with the BART fare equipment.

Interim AFC Equipment Upgrades

The purpose of this project is to design, procure and install material and equipment to maintain operation of the original Automatic Fare Collection (AFC) equipment until the modernized AFC equipment is available to upgrade or replace the original equipment. The original AFC equipment consists of IBM equipment installed in the early 1970s and Cubic equipment installed in the early 1980s. The original equipment requires obsolete parts that are extremely difficult or impossible to obtain, even from component remanufacturers. Other components of the system are becoming extremely unreliable due to age. Still other components in the system, such as the IBM addfare logic, are obsolete and cannot handle recent changes in AFC operational requirements (e.g., fare increases, new ticket types). This project is ensuring the District's ability to effectively collect fares.

Replace and Rehabilitate Escalators and Elevators

BART station escalators and elevators carry extraordinarily heavy loads, particularly in the various downtown subway stations. After 25 years of use and wear-and-tear, they are becoming unreliable and uneconomical to maintain and repair on a routine basis. The unreliability of many of these elevators and escalators is a significant source of passenger dissatisfaction. The 23 most unreliable escalators have been replaced, and all of the other escalators and elevators are being completely reconditioned. To the right is a photograph of a Balboa Park escalator under renovation.

Replace Platform Edge Detection Tiles

The existing platform edge tiles, intended to provide a visual and tactile warning of the adjacent drop-off into the trackway pit, have been worn heavily at many stations due to normal foot traffic, and are delaminating from the platforms as well. They are being replaced so that they will remain safe, functional, and in compliance with ADA, while continuing to ensure passenger safety.

Accessibility Improvements

These projects are providing mandated accessibility modifications to stations throughout the BART system. They are designed to improve the accessibility of the existing stations for disabled persons by providing new accessible route information and signs, modifying the street elevator at the 12th Street Station, removing architectural barriers, and meeting standards for accessible car and van parking. These projects are needed to comply with ADA requirements and to improve passenger comfort and convenience.

Repair Platform Sub-Surfaces at Various Stations

Platform edge sub-surfaces are deteriorating at several stations, causing the platform edge detection tiles to lift and creating potential tripping hazards for passengers. Repairs are required constantly and are very labor intensive. The sub-surfaces are being reconstructed to allow a stronger bond for the tiles.

General Station Renovation Program

This is a multi-year program to improve the original BART stations. Restrooms are being remodeled. Surfaces are being repaired, repainted and retiled as necessary. Weather-protection canopies and windbreaks are being renovated as needed. Repairs are also being made to concrete walkways that have been raised and damaged by growing tree roots and ground movement, causing tripping hazards. Worn station security gates are being replaced. Irrigation systems and landscaping are being reconditioned. Fire alarm systems are being replaced or reconditioned as appropriate. General station lighting and emergency lighting systems are being relamped and upgraded.

Modify Change Machines

The District's old money changers are more than twenty years old and suffer from mechanical breakdowns and design limitations. This project is redesigning and replacing changer components to provide change to the District's passengers more reliably and efficiently.

Replace Bus Transfer Ticket Machines

The bus transfer ticket machines in BART stations are increasingly unreliable, creating inconvenience for passengers who transfer to connecting bus services. This project is replacing 100 of these ticket machines. The 65 cashless machines used in East Bay stations have already been replaced. The 35 money-handling machines, which issue San Francisco Municipal Railway (Muni) transfer tickets, are yet to be replaced. The cash machine specifications are being developed in cooperation with Muni.

MacArthur Station Elevator Replacement

The two elevators in the MacArthur Station are difficult for people with disabilities to access due to the fact that they have to cross a busy roadway to reach them from the station agent's booth and faregates. Also, being remote from the Station Agent, these units are vandalized frequently and are often out of service as a result. These elevators are also susceptible to fare evaders. This project will install new elevators to both platforms within the paid area of the station near the agent's booth.

Track One Future Projects

Repair Stair Tread Edges and Replace Anti-Slip Treatments

The anti-slip treatment originally applied to help protect passengers from slipping and falling on station stairs must be renewed periodically at several stations in order to protect the safety of passengers, especially during wet weather conditions.

Stations Security

Stations in downtown San Francisco, Oakland and Berkeley have experienced increased vandalism and misuse over the past few years. This misuse includes the problem of urination in BART elevators and on escalators, the primary complaint of the disabled community in a recently settled lawsuit with the District. Large multi-level downtown stations are very difficult to police for this type of activity, particularly during late evenings and after revenue service.

This project will replace the present video surveillance system and add security barriers to station entrances (including elevators). The existing cameras are very limited and do not provide the detailed images necessary for prosecution. They also are very limited in number and do not cover areas that have proven to be susceptible to vandalism and other illegal activities. Entrance security barriers would be added to reduce the vandalism and misuse that occurs during non-revenue hours. Lighting improvements will be added in those areas that are known to have security problems and cameras will be added for additional surveillance. All video surveillance will be transmitted to BART police at both their line offices and Lake Merritt Headquarters.

Resurface Parking Lot Pavement

This project is required to repair surface parking lots, the majority of which have not been treated or resurfaced since originally constructed. Subsurface failures, uneven surfaces, potholes, and general degradation of the wearing surface of the pavement are evident in parking lots throughout the system. This project will repair the subsurface as needed, resurface 24 station parking lots with a two-inch asphaltic concrete overlay, and restripe affected stalls and pavement markings.

Replace Station and Yard Personal Address System and Closed Circuit Television Security

This four-part project will replace the original public address, closed circuit platform television and yard public address systems that will have outlived their projected useful lives. In addition, new security cameras will be installed in the core stations that will focus on the AFC equipment. This type of security surveillance is now in service at the five new stations.

General Station Renovation Program

The appearance of a station directly affects the public's perception of BART. Maintaining station function and appearance over the long term requires periodic renovation projects. The existing Systemwide Renovation Program has renovated sixteen of the original thirty-four stations, with four more currently underway. This new program addresses the remaining stations. The renovation work includes: painting station interiors and exteriors; bathroom rehabilitation for ADA compliance; landscaping improvements and energy efficient light fixture replacement; improvements to the station agent's booth and employee facilities; replacement of rolling grill doors; replacement of fire alarm systems; replacement of emergency exit lighting; renovation of drains; and replacement of sanitary, storm and water sewage pumps.

Automatic Fare Collection Equipment Capacity Expansion

The station capacity study indicated the need for additional automatic fare collection (AFC) equipment at many core stations. The need for additional equipment will be further exacerbated by basic underlying patronage growth, by the addition of new destinations due to the BART extensions program, and by the complexities of credit card and "smart card" features being added to the ticket vending machines. This project addresses these needs through a plan to add AFC equipment to those stations that require additional equipment capacity. For planning purposes, the project includes the following additional quantities: 80 ticket vending machines, 40 addfare machines, 100 gate consoles and 40 change-making machines. All vault preparation, cabling, installation, manuals, training, project management, DAS changes and parts complements are included. Major stations modifications or rearrangements may be required to implement this project.

Replace Stewart-Warner Signheads

The destination signs at 28 of the original stations have been in service for 25 years. They are near or beyond their useful lives, and have increasing failure rates and maintenance costs. BART's future operation may also require the ability to display different information on each of the signs along a single platform, which is not possible with the existing signs and controls at these original 28 stations.

Station Reroofing

The present renovation program will reroof only a few of the twenty-two roofed core stations. This project will continue this program to complete the remaining stations. All roof insulation and flashing will be replaced by this project.

Track Two Projects

Replace Platform Edge Detectable Warning Treatment at 20 Stations

This project will be needed to replace edge tiles that will have deteriorated over time. This project will remove existing edge tiles, prepare surface and provide new detectable platform edge treatments.

Remote Monitoring for Escalators and Elevators at Extensions Stations

The present escalator renovation project includes installation of a remote monitoring system. This system will provide a central monitoring station inside BART Central Operations and at the Oakland Shops. Whenever any escalator or elevator stops functioning, a message will be sent to both monitoring stations and will identify the cause of stoppage. The remote monitoring provides immediate and automatic notification to Central and Maintenance of any escalator or elevator stoppage. This eliminates the delay of notification from the Station Agent and also provides more accurate information of the cause of the problem. With accurate information, maintenance crews can be better prepared to correct the problem when dispatched. This project includes the extension stations, connecting them to the remote monitoring system installed in the escalator and elevator renovation projects.

Replacement or Renovation of Garage and Other Elevators

Many of the Districts' non-station elevators are at, or near, the end of their service lives. This program would evaluate each elevator unit to determine if it should be replaced or renovated, similar to the District's present renovation program of BART station elevators. This program would include BART's main office building units, parking structures, and shop buildings. Many of these elevator units are over 25 years old and replacement parts are becoming more difficult to obtain.

Other Track Two projects include the replacement of the North Berkeley Station ceiling, additional general station renovation, the replacement of hydraulic lift cylinders, additional AFC upgrades and energy conservation.

Controls & Communications Renovation Program

The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. This program includes 29 Track One projects, eight of which are completed and eight of which, such as Advanced Automatic Train Control, are underway.

Projects Completed

Replace Maintenance Vehicle Detection Devices

This project replaced the maintenance vehicle detection devices used in specialized high-rail maintenance vehicles. These essential vehicle detection devices allow Central Control to observe the location of on-track maintenance vehicles. They also serve as a safety device to prevent trains from entering into a work area where a maintenance vehicle is occupying mainline track. The new units replaced those which had been in service for over 24 years and which had been experiencing increasingly higher failure rates. When a failure occurred, the high-rail maintenance vehicle had to be removed from the mainline track per the requirements of the California Public Utilities Commission, resulting in non-productive time in maintenance work schedules and the need for single tracking.

Reverse Running in Transbay Tube

In the past, older train control electronics restricted reverse running in the Transbay Tube to one train at a time. Reverse running is a critically important function for recovering quickly from service disruptions in the Tube. This modification to train control electronics provided the necessary signaling to allow up to three trains to run simultaneously in the Transbay Tube.

Replace MetroVision Sign Units

This project replaced the MetroVision sign units in the downtown San Francisco and Oakland BART stations. These older video-display units were replaced with the same type of updated dot-matrix sign units as those that are now used in the new BART Extension stations.

Replace MARIS

This project replaced the District's 25-year-old Maintenance and Reliability Information System (MARIS), which tracks maintenance needs, maintenance completed, and impacts on inventory.

The District has also completed its Yard Control System Improvement project and projects that enhance train identification, improve emergency control center back-up and upgrade the District's cash handling system.

Projects Currently Underway

NXTGEN Program

This project is replacing obsolete on-line operational computer control systems. The systems being replaced are the Destination Sign System (DSS) software, the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the Central Computer System (CCS). This project is needed to replace the 25-year-old computers running the DAS and DSS systems and the 15-year-old CCS computers.

Fiber Optic/ Radio Telecommunications Network (TRACS)

This project is furnishing and installing a systemwide fiber-optic and multi-frequency trunked radio network to replace the equipment used by train operations, station operations, BART Police, and maintenance forces. The old radio system had several significant shortcomings, both in terms of capacity and reliability, which had frequent negative operational impacts and occasionally would affect passenger safety. This project is being implemented through an innovative joint development program, with significant long-term revenue potential.

Advanced Automatic Train Control (AATC)

BART is currently testing, and will subsequently install, an advanced train control technology, which will enable the BART system to nearly double its train carrying capacity. When implemented between Bay Fair and Daly City stations, this project will allow system throughput to increase from the current 21 trains per hour up to 30 trains per hour. The system will be installed over the existing control equipment with relative ease and no service disruptions. AATC will permit more accurate monitoring of train location, allow reduced run times and, thereby, increase the efficiency of the vehicle fleet. The project will help BART to meet the increased demands on the system, as headway reductions become necessary in the future, as well as displace significant needs for train control renovation. In the following photograph, a AATC antenna is being installed in a ring tunnel section near the Lake Merritt Station for AATC Phase II.

Replace Workstation Consoles in Central Control

This project is replacing existing Central Control workstations that are obsolete and cannot be expanded. This project provides the display hardware, local area network (LAN) interface equipment, software, installation and testing to make the units fully functional in BART's Central Control facility.

Wayside Train Control Renovation

This is a long-term program to replace vital train control components and subsystems that are becoming unreliable due to age, and difficult to maintain due to obsolescence. Many of these components are no longer being produced or supported by the original manufacturers. If this work is not completed in a timely manner, essential train control hardware failures could lead to extensive service disruptions. This program is also replacing the Sequential Occupancy Release System (SORS). SORS is a back-up safety system required by the California Public Utilities Commission to ensure that on-line trains maintain a safe separation distance in the event of any malfunction or failure of the main train control system. The original primary SORS computer is 25 years old, obsolete, and becoming difficult to maintain. This safety-critical system must remain operational and reliable.

Second Communications Specialist Workstation in Central Control

As the new BART extensions become operational and the number of trains on-line increases, it is necessary to create a second communications workstation from which BART communications specialists in Central Control can make essential announcements about train movements, service disruptions, special conditions and other events that affect passengers.

The Yard Cable Plant Replacement project is also underway.

Track One Future Projects

Installation of AATC Complementary Technology: Broken Rail and Silent Train Detection

The AATC system cannot detect vehicles that are "silent" to the AATC radio system. Additional development to the AATC system needs to occur to permit the detection of "silent" vehicles. Since AATC is a radio-based system, AATC cannot detect the condition of the rail. As AATC is presently being implemented, detection of these conditions will be provided by the track-circuit-based Westinghouse train detection system. The Westinghouse system is beyond its design life and needs replacing. In order to replace the Westinghouse train control system and allow AATC to become a stand-alone system, the AATC system needs to be augmented with silent train detection and broken rail detection.

Installation of AATC Complementary Technology: Program Stop

The automatic operation of berthing a train at a passenger station is called program stop. Presently the program stop is accomplished by coordination of the wayside Westinghouse train control system and the car-borne train control system. To fully replace the Westinghouse train control system, this function needs to be incorporated into the AATC system.

Central Computer System Software Development to Support AATC

The current Central Computer System (CCS) software was developed with the constraints of the Westinghouse train control equipment and therefore has a limited ability to control the movement of the trains. In contrast, the AATC system exerts very fine control over train movement. AATC can also determine the location of trains on the BART mainline to within 30 feet. In order for the Operations Center to most effectively operate the AATC-based train control system, the CCS core train management logic and computer displays in the current CCS software must be restructured.

Installation of AATC on Remainder of Core System

Presently the car-borne automatic train control system has specialized electronics required to detect track signals from the Westinghouse wayside train control equipment. The AATC system does not require these electronics. Consequently, the cost of car-borne ATC replacement can be minimized. The AATC system has one-third the components of the Westinghouse system and therefore will be significantly less costly to maintain. AATC will permit more accurate monitoring of train location, allow reduced run times and, thereby, increase the efficiency of the vehicle fleet. This project will install AATC on the remainder of the core system (A/R/C/K lines). The project will help BART to meet the increased demands on the system, as headway reductions become necessary in the future, as well as displace significant needs for train control renovation.

Replace Original DTS Data Communications System Equipment at 44 Locations

BART is a highly automated mass transit system. A complex set of remote and central computer systems monitors many support functions, including train operations. To best manage this distributed system, it is necessary to continuously monitor and control this equipment automatically. The overall supervision of this system is performed in BART's Operations Control Center (OCC), where OCC staff receives data from every BART station control point. The original data communication system, called the Digital Transmission System (DTS), is the key means to bring this data to the OCC. The DTS provides digital communications between the central computer system (CCS) at Lake Merritt and all original BART passenger stations, yards, the Transbay Tube, and the Berkeley Hills Tunnel. The DTS is part of the first-generation BART equipment and 25 years later represents a system that is difficult to maintain, lacks sufficient spare parts, and has some components that cannot be replaced with modern components.

With the construction of BART's new extension stations, the DTS was replaced with the Supervisor Control & Data Acquisition System (SCADA). This system represents the new technology standard that will serve the District well into the next millennium. This project will replace the District's original data communications system with the new SCADA system at 44 locations within the original BART system.

Replacement of Interlocking Relay-based Logic with Microprocessor-based Logic

The existing interlocking relay-based logic controllers, a critical element of the train control system, are 30 years old. Most of the relay equipment is no longer manufactured. The industry is moving to microprocessor-based controllers. Consequently obtaining interlocking type relays is increasingly difficult. Lead-time for procurement is now a minimum of 20 weeks. The existing relay physical plant has aged to the point where the relays are physically deteriorating. Relay logic controllers will need to be refurbished or replaced. To improve the service operations, the relay-based logic controllers have been expanded over time and presently are at capacity. Future expansion of the existing relay logic controllers is very difficult and expensive. Replacement of the relay-based logic with microprocessor-based logic will resolve the capacity issues of space, power, and logic size.

Wayside Wiring for Interlocking - Replace Underground

By the time this project is commenced, the wayside wiring may be 45 years old. The design life of the wire, however, is estimated at 40 years. This project will replace the interlocking power and control wiring from the switch machine to wayside junction boxes. All such wiring on the core BART system would be replaced in coordination with the replacement of wooden ties at interlockings.

Richmond and Daly City Yard Console Replacement

The control console in the Richmond Tower is 30 years old. The equipment is obsolete and difficult to maintain. The Daly City console is ten years old and supporting electronics have been heavily modified to support the Colma expansion. In addition, the Daly City equipment is obsolete and spare parts are an issue. All this equipment is vital for the day-to-day operation of the yards and continued performance needed to meet the requirements of yard operations.

Other Track One future projects include the augmentation of police radio coverage, the improvement of operations and fire protection radios and the replacement of yard voice recorders.

Track Two Projects

Replace Operating System Computer Hardware

The high performance computers necessary to run BART's operating systems will become more difficult to maintain as they become older and technology changes. The main operating computers should therefore be replaced every seven to ten years to ensure that these critical systems for operation of BART trains and data collection systems are reliable and maintainable. This cycle necessitates that the District plans well in advance to ensure that a seamless transition to new computing equipment can take place before serious system disruptions occur.

The operating computer system controls and supervises many of the key operating systems of the District. These include: Operation Control Center (OCC), Data Acquisition System (DAS), Destination Sign System (DSS) and BART station computers for line functions such as the interface from credit/debit vendors to the District's bank for ticket purchases. All of these systems have been incorporated in the current Track One NXTgen projects that will be completed soon. The NXTgen program was designed with an "open system" architecture that will facilitate the future hardware renewals that this program proposes. This program will utilize the benefits of the software "open system" to purchase new computers to serve the District's ever increasing computing needs.

Replace District Telephone Systems

This project will replace all of the District telephone systems. This includes the nineteen PABX switches at BART offices, all of the Extension stations, the line offices and all of the telephone instruments connected thereto. Certain portions of the telephone cable plant will also need to be replaced. PABX software will be required to meet the increased demands of operations.

As the equipment ages, spare parts will no longer be manufactured for much of this old equipment, making it very difficult and costly to maintain. In addition, many enhanced communication functions will be required that the present equipment does not provide. These capabilities will include voice/data integration, digital Internet access and video conferencing support among others. This project will utilize the fiber optic "back-bone" being installed in the Track One program.

Automatic Vehicle Identification Readers at Yards and Other Locations

BART performs revenue vehicle tracking and accounting via manual systems for cars in yards, and via MARIS for cars on the mainline. These systems do not provide for data exchange between them and as a consequence often contain incomplete or incorrect information. This affects efficient operation of the yards including locating cars needing maintenance and repair. This project would include the procurement and installation of new Automatic Vehicle Identification (AVI) scanners and the installation of wiring and interfaces between Yard Control Systems and MARIS.

Network Equipment Replacement: Administration/Operational Networks

There is an ever-increasing need for additional information-based services at the desktop of District personnel. For example, interaction with other agencies, contractors, suppliers, etc. is required at an accelerating rate. The architecture of the present office network will be unable to support these requirements including the requirement for much faster speeds. In addition, spare parts will no longer be available for this equipment. Parts for networking equipment are typically stocked for about a five-year period at best.

This project will replace all the District data networking equipment. This includes approximately 40 network hubs which have been in service for many years to support the personal computers in most District offices, as well as those which support approximately 60 operational locations, such as station agent booths, radio transmitters, AFC equipment, destination signs, train control equipment, etc. Much of the cabling for the office computer network will need to be replaced as well.

In addition to the above-described Track Two projects, the District plans to install AATC on the remainder of the system and to install new systems in its yards, shops and towers.

Facility Renovation and Replacement Program

The purpose of this program of projects is to address the deterioration of the shops and yards due to 25 years of continuous use and age, and to provide adequate facilities to store and maintain a growing fleet of revenue vehicles. Some of these projects will improve passenger transit service by improving revenue vehicle reliability through better maintenance, by reducing vehicle out-of-service time, and by keeping as many vehicles in service as possible. These projects will improve the safety of the shops and yards, provide cost savings to the District by reducing maintenance turn-around time, eliminate travel time to and from vendors and improve the efficiency of the shops and yards by providing employees with dependable equipment. 12 of the 25 Track One projects in this program are completed, with ten underway.

Projects Completed

Fire Main Replacement at Hayward Yard

Two fire mains had to be removed due to leaks and a subsequent increase in surface water buildup. The leaking was becoming a safety hazard and posed a serious threat to the building foundations. One of the fire mains was located beneath the shop apron slab and was replaced with an overhead pipe. This project also installed a new fire main beginning at a new street tie-in. The new main was connected to the new overhead pipe through the center of the shop to feed the existing fire protection system.

Wheel Truing Machines

This project replaced a 25-year-old wheel truing machine in the Hayward Shop. A new, second wheel truing machine was also installed at the Richmond Shop. The new, more reliable and higher capacity truing machines allow the District to go to a higher standard of preventive maintenance for wheel profiles, increase productivity, and result in lower load factors since fewer cars are being held out-of-service waiting for wheel re-profiling.

Yard Fuel Tanks

This project installed 500-gallon above-ground gasoline tanks and dispensing units at the Richmond and Hayward yards. This is an efficiency improvement that has eliminated the need to bring maintenance vehicles from these outlying yards into the Oakland Yard to refuel.

Richmond Yard Efficiency Improvements

This project reconfigured trackwork at the Richmond Shop to improve staging and routing of cars.

Replace Dust Collector Systems at the Richmond & Concord Shops

This project brought the Richmond and Concord blow-pit ventilation systems into compliance with CalOSHA regulations regarding employee exposure to airborne contaminants, as well as renovated the shop's heating and cooling systems.

MetroCenter Building Fuel Tank

The old 4,000 gallon fuel tank located in the parking lot of the MetroCenter Building, which provides fuel for the emergency generator located on the roof of that building, was no longer in compliance with regulations for underground fuel storage. It has been replaced.

Richmond Yard Security Enhancement

BART employees had become increasingly concerned with their safety while working in the Richmond Shop and Yard. Although no District employees have been targeted, gunfire from the surrounding community has hit several buildings. This project enhances personnel safety by improving specific features at the Richmond Yard Facility, including the entry gates, access roads, fencing, and lighting.

Replace Parts-Washing Facilities in All Shops

This project is replacing parts-washing facilities in all shops so the District will comply with environmental requirements. Parts-washing wastewater needs to be specially handled to meet environmental discharge laws. The District will be subject to citations and a possible shutdown of facilities, if found not to be in compliance.

Other completed Facility Renovation projects include: Hayward Test Track Security Alarm, Concord and Richmond Yard Track Crossings, Wheel Press at Hayward Shop, Oil and Water Separators at Richmond and Hayward Shops and Richmond Shop Roof Repairs.

Projects Currently Underway

Hayward Shop Traction Motor Repair Facility

This project is renovating the Hayward shop and replacing old shop maintenance equipment. This renovation is necessary to keep up with increased demand, will result in increased productivity, and will reduce the time cars are held out of service for repairs.

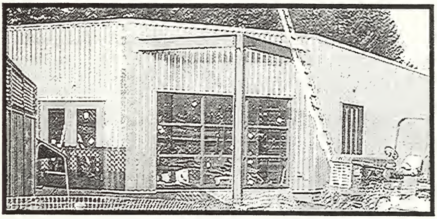
Employee Facilities Improvements

The infrastructure of employee worksites in the maintenance shops, training facilities, warehouses, and the Cash Handling Building has not changed substantially since the BART system opened. This project is providing basic essential reconditioning and remodeling as needed to create acceptable work environments.

Richmond Transit Vehicle Washer Facility Overhaul

The facilities used to wash the exterior of transit vehicles are still the original system installations. They are becoming increasingly inefficient, and have difficulty complying with current standards for containment and treatment of wastewater. This project is bringing the Richmond Yard car washer back up to full operation, and also providing wastewater controls.

Reconfigure and Renovate Transportation Buildings



These buildings, one of which is depicted in the photograph at the right, are located at the train dispatch yards and provide the essential administrative facilities for on-site train operations, as well as lunch/break rooms, locker rooms, and other support facilities for on-duty train operators. These buildings are being reconfigured to serve the increased number of operators required to provide higher service levels. At the same time, the existing structures are being reconditioned and remodeled as necessary.

Non-Stock Inventory (repairable parts provisioning)

This program maintains adequate inventory of all high-value repairable parts in support of transit vehicles, station and field equipment, and automatic fare collection equipment. Failure to provide for these requirements could lead to vehicles being out-of-service and disruption in maintenance and service operations. This on-going need must be funded annually.

Track One Future Projects

Reroofing at the Shops and Other District Facilities

Some District buildings, such as the shops, still have their original roofing systems that are in poor condition. Typically, the original roofing systems have numerous bubbles and are brittle. These conditions indicate loss of adhesion between plies caused by water intrusion. Furthermore, most of the flashings are blistered and cracked. Some areas of the roofs feel spongy while some areas are depressed. These conditions indicate wet or deteriorated roof insulation. This project will remove roofing, insulation and flashing at all revenue vehicle shops, non-revenue vehicle shops and maintenance shops throughout the District, and replace them with roofing systems that are guaranteed for 15 years. These roofs must be replaced periodically as they deteriorate due to age and exposure.

Non-Stock Inventory (repairable parts provisioning)

This program maintains adequate inventory of all high-value repairable parts in support of transit vehicles, station and field equipment, and automatic fare collection equipment. Failure to provide for these requirements could lead to vehicles being out-of-service and disruption in maintenance and service operations. This on-going need must be funded annually.

Track Two Projects

Recondition Shop Cranes

The existing heavy maintenance cranes located in the East Bay shops are still the original installations. Safe operation of these lifting units must be ensured through periodic reconditioning.

Additional Storage Facilities

Serious deficiencies currently exist in all storage facilities. BART currently utilizes a combination of District-owned and rental space for the storage and distribution of inventory materials. Storage space shortages will be more severe as inventory for expanded operation comes online. An assessment by staff indicates a significant increase in stock-keeping units, both consumable and repairable, over the next few years, plus additional storage needs further down the line. This project will construct and/or acquire a centralized storage and physical distribution center. The facility will be built to accommodate the repair shops and storage needs through 2010.

Overhead Cranes Renovation at Shops

The overhead bridge cranes in the four shops are over 25 years old, and many of their major components are near the end of their service lives. In addition, they do not meet new seismic requirements for heavy-duty cranes. This equipment is used on a daily basis in the repair and maintenance of the BART fleet. The age of the equipment has made it difficult to find replacement parts. This project will renovate these cranes with modern components that will improve crane reliability, safety, and performance.

Transit Vehicle Washer Facilities at Hayward and Concord

The facilities used to wash the exterior of transit vehicles are still the original system installations. They are becoming increasingly inefficient, and have difficulty complying with current standards for containment and treatment of wastewater. This project will bring the Hayward and Concord Yards' car washers back up to full operation, and also provide wastewater controls.

Other Track Two projects include the rehabilitation of the TransBay Tube facility, resurfacing of roads and parking lots, relamping at shops and yards, facility painting and repair, shop roll up door replacement, Oakland Shop fuel facility replacement, development of a train operator training simulator, Lake Merritt building renovation, grease/oil facilities replacement and renovation of storage area canopy, lighting and office at Richmond Shop.

Work Equipment Program

The purpose of this program is to replace worn and obsolete maintenance vehicles, service vehicles, and maintenance equipment. The equipment includes such items as tools, power generator sets, light towers, ground and building maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police vehicles, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

BART's maintenance equipment gradually becomes worn from frequent use. Eventually, it becomes more economical to replace the old equipment rather than to repair it. The ongoing equipment replacement program ensures that old, worn out equipment is replaced regularly to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to passengers will deteriorate.

EXTENSIONS PROGRAM

Growing the BART System

BART has experienced an extraordinary period of growth over the past several years. System extensions to Colma, Pittsburg/Bay Point, and Dublin/Pleasanton have added 23.5 miles of mainline and five new stations. Fiscal Year 1999 saw meaningful gains in the implementation and funding of BART's extensions program. For the East Bay, the first increment of grant funding was secured for preliminary engineering and environmental analysis for the Oakland Airport Connector.

For the West Bay, May 1999 was a milestone month for the BART's extension to San Francisco International Airport (SFIA), marking the first full year of construction under the Line, Trackwork and Systems contract, the largest of four design-build contracts for the project. In addition, BART issued three contracts associated with the extension to San Francisco International Airport (SFIA) and Millbrae this fiscal year. Site preparation and utility relocation are already well underway. Under a second contract, subway and station construction now stretches over 1.25 miles. A third contract was issued that will build the BART-Caltrain intermodal station at Millbrae. The Airport itself has separately contracted for construction of the BART station to be located at the new International Terminal. On a dollar value basis, funding for 92% of the contract costs for the extension has already been committed.

Phase 1 Extensions

The purpose of the Phase 1 Extensions Program is to expand the BART rail system to areas not yet directly served by BART, but where extension commitments have been made. The areas include eastern Contra Costa and Alameda Counties, southern Alameda County, and northern San Mateo County. This program includes project planning and environmental review; property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and the purchase of vehicles.

Projects Completed

Castro Valley and Dublin/Pleasanton

This project, which opened in May 1997, is a 13.8-mile double-track, new branch line extension to the original BART system. It begins with a connection to the existing Fremont BART line just south of the Bay Fair Station in San Leandro and continues eastward in the median of the I-238 and I-580 freeways to the end of the project at Dublin/Pleasanton. Currently, there are two stations on this extension: one in Castro Valley located at I-580 and Redwood Road, and a second station in East Dublin/Pleasanton near Hacienda Business Park. A third station at West Dublin/Pleasanton near Stoneridge Mall will be added when funding is secured.

North Concord-Martinez and Pittsburg/Bay Point

This project is a 7.8-mile double-track extension with two stations. It runs north from the existing Concord Station to a new North Concord-Martinez Station and then east along Route 4 to a Pittsburg/Bay Point Station. Additionally, improvements were made to the existing Concord Yard to increase operating efficiency on the extended line. The North Concord-Martinez Station opened in December 1995. The extension to Pittsburg/Bay Point opened in December 1996. This project will be extended to Railroad Avenue in Pittsburg in eastern Contra Costa County when funding is secured.

Colma

The Colma Extension, which opened in February 1996, added a new station, parking garage, and bus transfer facility approximately one mile past the Daly City Station. This project has relieved access and traffic circulation problems at the Daly City Station and has provided additional BART system access via I-280 and Route 1. It is also the first leg of the extension to San Francisco International Airport, which is now under construction.

Projects Currently Underway

BART- SFO Extension

By providing an alternative to driving to the SFIA, the BART-SFO Extension will help diminish the volume of cars on the already congested US 101 and 280 corridors, thereby reducing traffic congestion, fuel consumption and air pollution in the Bay Area. When completed, this extension will provide a convenient, cost-efficient intermodal transportation link between BART, Caltrain, SamTrans, West Bay communities and East Bay communities.

The BART-SFO Extension is the result of nearly 25 years of coordinated regional and local planning and is spearheaded by a partnership among six transportation entities, including BART, FTA, SFIA, the California Transportation Commission (CTC), San Mateo County Transit District (SamTrans) and MTC.

The BART-SFO Extension will continue the BART system further into San Mateo County from the new Colma Station to a station at SFIA, with three other stations at South San Francisco, San Bruno, and Millbrae.

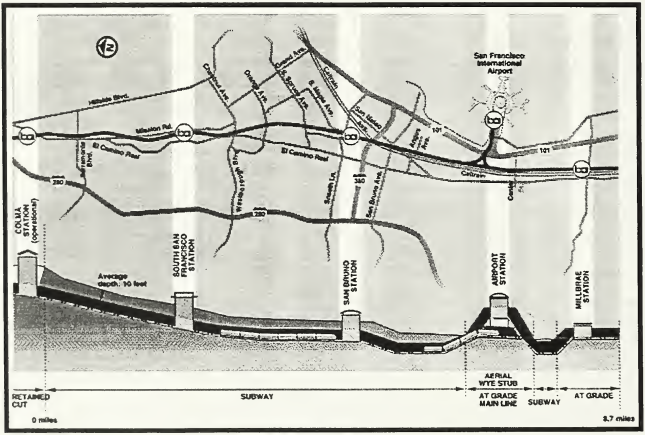
The intermodal station at Millbrae will directly link BART to Caltrain via a cross platform transfer. Although BART and Caltrain will remain independent systems, the intermodal connection at Millbrae will offer the advantage of continuous rail travel throughout the Bay Area, providing transit passengers with a 180.7 mile regional rail system. The Millbrae Station, the largest of the new stations, will be located north of Millbrae Avenue and west of US Highway 101. The station's concourse will connect on the east side to SamTrans buses, kiss-and-ride drop-offs and on-site parking facilities for approximately 3,000 vehicles. Many access facilities are included in the station plan, including a tactile guide path for sight impaired users, specially designed elevators for easy wheelchair access and pedestrian and bicycle access. Bicycle lockers and racks will be provided on both sides of the station, located near the main access routes.

The South San Francisco station will be located between El Camino Real and Mission Road, north of Kaiser Permanente and south of old Macy's warehouse. The Hickey Boulevard Extension and a new BART access road will provide direct access to SamTrans bus bays, kiss-and-ride drop-offs and parking for over 1,300 cars.

The San Bruno station will be located on Huntington Avenue, behind the Tanforan Shopping Center and north of Interstate 380. A plaza will connect the station and the shopping center and a 1,000 space parking structure, accessible from Sneath Lane, will be situated over the SamTrans bus bays on Huntington Avenue.

Once completed, the joint BART/Airport Rail Transit station will be located at SFIA Concourse H, in front of the new International Terminal. A set of passenger service quality standards approved by the BART Board of Directors will ensure that the majority of riders arrive within a five minute walk to their ticket counter.

The following is a graphic illustration of the BART-SFO Extension alignment, which will add 8.7 miles of new passenger service track to the BART system. The 8.7 mile Project consists of 7.5 miles of mainline track extending south from Colma to Millbrae with an additional 1.2 miles of track running east-west in an aerial "wye stub" into the Airport.



Track One Future Projects

Warm Springs/Santa Clara Phase I

The Warm Springs/Santa Clara Phase I Extension, as currently defined, would extend 5.4 miles of double track from the existing Fremont Station, continuing southward in the railroad corridor and terminating at the Warm Springs Station just south of Grimmer Avenue in Fremont. An intermediate station is planned at Washington Boulevard in the Irvington District. Regional funding commitments have been secured for a portion of the cost of this project. On this basis, this project is partially listed in Track One, with the remaining unfunded balance in Track Two.

Oakland Airport Connector

The Oakland Airport Connector Project would directly connect the BART Oakland Airport/Coliseum Station with the Oakland Airport terminals via a fully automated, elevated train system, providing improved transit service for air travelers and air terminal employees. The Connector, a solution favored by the Port of Oakland and the Coliseum community, is projected to carry 3.3 million people per year by 2010 and transport passengers five times faster than ground-based transit. Funding for environmental assessment and preliminary engineering has been secured, and these project elements are listed in Track One. The remaining unfunded balance for construction is in Track Two.

Track Two Projects

West Dublin/Pleasanton Station

The Dublin/Pleasanton Extension currently includes two stations: one in Castro Valley and a second station in East Dublin/Pleasanton near Hacienda Business Park. Although both of these stations opened in May 1997, the East Dublin/Pleasanton Station is already so heavily utilized that the parking lot is full by mid-morning. Also, for many commuters living in the Dublin/Pleasanton area, this station is in the opposite direction from their commute destinations. The original plans for the extension therefore called for a third station at West Dublin/Pleasanton near Stoneridge Mall, which was deferred due to funding constraints.

In June 1998, BART issued a request for proposals for the joint development of the West Dublin station and adjacent real estate. A development company was selected by BART for exclusive negotiations to assess the viability of using lease revenues from mixed-use, private development to construct a BART station and ancillary facilities. BART and the development company are working with the Cities of Dublin and Pleasanton to assess opportunities, constraints and a means of financing the overall project. The project, when designed, will include parking, a bus transfer facility, and one or more of the following: office space, a hotel, residential units, and/or retail space. The joint development of both the West Dublin Station and adjacent land will enable BART to construct the station much earlier than otherwise possible by substantially reducing the amount of public funding required to build the station and by providing services and amenities accessible to BART riders.

Phase 2 and 3 System Extensions

The BART capital program includes the future planned extensions to Antioch, Livermore, northwestern Contra Costa County, the San Ramon Valley, the South Bay, and other corridors. BART will continue working with these communities, and will pursue funding for further planning and development of these projects. However, funding constraints indicate that their implementation will not be likely within the FY 2000 through FY 2010 timeframe of this current BART capital program.

Commuter Rail System

Another approach to providing high-quality rail service to some of the planned Phase 2 and 3 extension corridors relatively soon is traditional commuter rail. BART has completed evaluations of several possible new commuter rail lines to serve these corridors (and beyond). This commuter rail program could add significant new passenger rail service to the regional rail network. The program identifies a comprehensive service plan that would provide a near-term commute alternative, including critical intermodal connections, to alleviate bottlenecking in some of the most heavily congested commuter corridors in the Bay Area.

SEISMIC RETROFIT PROGRAM

The earthquakes of Loma Prieta in 1989, Northridge in 1994, and Kobe in 1995 have caused seismic engineers and geologists to re-evaluate design codes, particularly in areas where structures are very close to active faults. The Hayward Fault is of great concern because of its close proximity to the District's Dublin/Pleasanton, Concord, Richmond and Pittsburg/Bay Point lines. Seismic experts have estimated a one in four chance of a major earthquake of a magnitude 7.0 or greater at a location on the Hayward Fault within the next 30 years. An earthquake of this magnitude has the potential to cause serious damage to BART structures. The damage caused by such an earthquake could require significant repair and replacement of components of the system.

While BART's original designers utilized seismic design standards that greatly exceeded standards of the time, new understanding of seismic ground movements combined with computer analysis tools have changed the way engineers design for earthquakes today. BART structures, when examined using today's criteria, require a retrofit upgrade program to ensure satisfactory performance through a major seismic event. This program addresses the single pier viaduct structures, which are likely to be most vulnerable in an earthquake, in addition to other trackway structures, stations and buildings of the District.

In addition, the seismic joints of the Transbay Tube, located at each end of the Tube, require re-adjustment. These joints were designed to permit independent movement, but from settlement over time and the Loma Prieta Earthquake, have lost some of their capabilities to move and adjust in a major earthquake. This program would restore their capability to nearly the original range of free movement.

The program is to be implemented in five segments over a period of seven to nine years:

Segment I: Caltrans Local Seismic Retrofit Program

After the Loma Prieta Earthquake, the California State Legislature passed a 1989 law that charged Caltrans with the responsibility to review all publicly owned pedestrian, vehicular, and rail transit bridges over city and county roads and streets. This law also mandated that Caltrans retrofit any such structures determined to be vulnerable to collapse during a severe earthquake. As a result, Caltrans established the Local Seismic Retrofit program to accomplish these tasks. The BART system has many transit bridges over city and county streets and, therefore, was included in the program. Caltrans, with BART's assistance, completed an inventory of BART bridges that identifies 261 bridges that cross over city or county streets. Of that total, 34 are extension bridges that were designed to the latest BART seismic criteria. The remaining 227 structures are bridges of the original system and qualify now for inclusion in the program. Caltrans will do a seismic safety screening to determine if any of the 34 extension bridges will be included in the program.

Aware of the high probability that a high magnitude earthquake will strike the Bay Area in the near future, BART Engineering presented to upper management and the Board a systemwide seismic retrofit program. The purpose of the program is to upgrade the facilities of the original system such that their seismic-resisting capabilities are consistent with the newer extension facilities, which were designed and built to higher design standards.

Under Caltrans' program, seismic retrofits are to meet a Non-Collapse Standard. This performance standard allows major damage to structures during a major earthquake as long as collapse is prevented. BART's needs are more appropriately met by retrofitting to a BART-defined Serviceability Standard. This stringent performance standard allows only a minimal damage to facilities during a major earthquake to ensure resumption of operations after minimal delay. Acknowledging the need for this stringent performance standard, the BART Board of Directors passed a resolution requiring that seismic retrofits of BART facilities are to be in accordance with the Serviceability Standard.

Seismic retrofit to meet Caltrans' standard has built-in requirements that automatically trigger the kinds of retrofit that will also meet BART's standard. For that reason, the differences between the two standards in a large number of BART's bridge structures are not as great as their descriptions may suggest.

Caltrans will fund 100% of eligible BART retrofits up to Caltrans' Non-Collapse Standard. Reimbursable costs include engineering, management, construction and support overheads. Per Board Resolution, retrofits under the Caltrans program will be upgraded from the Non-Collapse to BART's Serviceability Standard. The cost of the upgrade is to be borne by BART and must be pre-determined and accepted by both parties before the program can proceed to succeeding phases.

Segment II: Seismic Lifeline Program

The Seismic Lifeline Program will retrofit aerial structures not included in the Caltrans Local Seismic Retrofit Program, from the Coliseum Station to the Oakland Wye; from the west portal of the Berkeley Hills Tunnel to the Wye; from Ashby Station to MacArthur Station; and from the Wye to Colma station. *Segment II* also includes adjustment of the seismic joints in the Transbay Tube. The objective of *Segment II* is to ensure a core system of operation, with turnbacks for each trunk and access to the Oakland and Daly City shops. In addition, *Segment II* includes a systemwide seismic safety study that will identify the critical seismic retrofit needs of the BART system.

Segment III: Additional Critical Aerial Structures and Stations Program

Segment III will retrofit the aerial structures from the Coliseum Station to South Hayward Station, adding direct access to the Hayward Yard and connecting the Dublin/Pleasanton line to the system. In addition, *Segment III* will retrofit those stations deemed to be seismically most at risk by a systemwide seismic safety study.

Segment IV: Aerial Structures and Aerial, At-Grade & Underground Stations Program

Segment IV will retrofit the remaining single pier trackway structures south of Hayward Yard (Fremont line), north of Berkeley (Richmond line), and east of Orinda (Pittsburg/Bay Point line). *Segment IV* will also include other stations deemed to be at risk by a systemwide seismic safety study, but not addressed in *Segment III*.

Segment V: All Other BART Facilities Program

Segment V will retrofit BART facilities and other structures deemed to be seismically at risk by a systemwide seismic safety study, and not covered by the previous segments.

Projects Currently Underway

Caltrans Engineering Study

This Caltrans-sponsored engineering study will identify those BART structures the seismic-triggered collapse of which would put non-BART infrastructure at risk and to estimate the cost of seismically retrofitting such structures. This study will further identify those retrofits needed to meet BART's Serviceability Standard and to assess the cost of such retrofit.

Track One Future Projects

Caltrans Local Seismic Retrofit Program

This Caltrans-sponsored project will implement the seismic improvements to the BART structures identified by the engineering study as preliminarily described under *Segment I* above. This project element is listed as Track One on the basis of Caltrans' funding commitment.

Retrofit Seismic Joints of Transbay Tube and West Oakland Station

This project element is a component of *Segment II: Seismic Lifeline Program*. It would restore and/or increase the designed movement capacity of the joints thereby lessening the possibility of joint failure. Joint failure could cause flooding in the Tube. This project element is listed in Track One on the basis of a pending Section 5307 grant programming request.

Seismically Retrofit Aerial Structures from Transbay Tube to West Oakland Station

This project element is a component of *Segment II: Seismic Lifeline Program*. It would strengthen the aerial structures of this lifeline corridor segment of the BART system that provides safe passage from the Tube to West Oakland Station, for emergency evacuation if necessary during an earthquake. This segment in particular requires strengthening, because the aerial structures are founded on spread footings over weak soil that is prone to failure during earthquakes. This project element is listed in Track One on the basis of a pending Section 5307 grant programming request.

Seismically Retrofit Aerial Structures from West Oakland Station to Oakland Wye

This project element is a component of *Segment II: Seismic Lifeline Program*. It would strengthen the aerial structures of this lifeline corridor segment of the BART system that provides safe passage from West Oakland Station into the Oakland Wye subway, for emergency evacuation if necessary during an earthquake. This segment in particular requires strengthening, because the aerial structures are founded on spread footings over weak soil that is prone to failure during earthquakes. This project element is listed in Track One on the basis of a pending Section 5307 grant programming request.

Track Two Projects

The remainder of the Seismic Retrofit Program (a portion of *Segment I* and *Segments II-V*) is currently listed in Track Two. This portion of the program will be defined more explicitly to reflect the results of a seismic safety study.

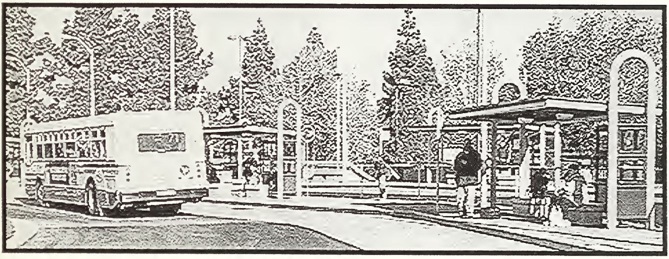
SERVICE IMPROVEMENTS PROGRAM

The purpose of this program of projects is to improve passenger services and system capacity at BART stations and shops by expanding maintenance facility capacity, building intermodal transit centers, bicycle facilities, and other passenger service, system capacity, and station area improvements. Of the 40 Track One projects listed in this program, 7 are completed and 22 are underway. For some station area development projects, BART is or may be the official sponsor. Additional station area development projects for which BART is working with local and regional jurisdictions, but is not the official sponsor, are listed in the section of this chapter titled *Locally-Sponsored Station Area Development*.

Projects Completed

Hayward, Bay Fair, Concord, Walnut Creek, El Cerrito Plaza, Richmond and Daly City Transit Centers

All of these projects are now operational. They improve traffic circulation in the vicinity of the stations, and improve the passenger experience by providing upgraded bus waiting and loading areas, weather protection and other amenities. The Pittsburg Park and Ride Lot project is also completed. The following is a photograph of the Richmond Station intermodal facility bus bays.



Anti-Graffiti/Vandalism Program

This program utilized increased public awareness, plainclothes police enforcement, CCTV-VCR surveillance systems, and inter-agency cooperation to combat graffiti and vandalism systemwide.

Maintenance Facilities Upgrade and Expansion

During the 1980s, BART augmented its operating fleet, adding 230 cars to rail service. In addition, BART has increased the demands on its trains over the past several years by reducing headways and increasing car miles. The increased size of and demands on the operating fleet requires that BART's heavy maintenance facilities be reconfigured, renovated and expanded in order to increase shop efficiency to a level adequate enough to properly maintain the expanded fleet. This expansion is also essential to reduce the amount of time cars are held out of service for maintenance and repairs. This year, analysis of BART's maintenance facilities determined that a shortage of work spaces is the primary reason for long queues of BART cars awaiting maintenance or repair. As a result, BART has refined its maintenance facility upgrade and expansion program into a set of discrete projects, as follows.

Projects Underway

Concord Shop Expansion

The first project to be implemented in this program is the Concord Shop Expansion. This project will convert two "flats" by installing in-floor vehicle lifts to provide under car access and will modify the tracks at the facility to facilitate vehicle triage and access to work spaces. In addition, four new lift-equipped work spaces will be added in an expanded building. Modifications of parts storage and other ancillary shop features will be made concurrently.

Hayward Shop Track Improvements

This project will add track segments behind the main shop to facilitate the sorting of cars selected for service. An additional track segment between the shop and yard will improve shop effectiveness by providing separate incoming and outgoing connectors, facilitating release and intake of cars.

Hayward Component Repair

This project will extend the front of the shop building two floors, providing a 10,000 square foot expansion of the component repair shops that rebuild electrical and mechanical sub-systems.

Daly City Transit Vehicle Washer Facility

This project will provide a new transit vehicle washer to service the fleet maintained at this West Bay maintenance facility.

Track One Future Projects

Hayward Shop Lifts

This project will install vehicle lifts on four existing flats in the main shop, increasing service capacity by approximately 50%.

Richmond Shop Lifts

This project will convert two "flats," equipping the work spaces with vehicle lifts to facilitate the removal of large under-car components.

Studies and Plans

Track One Future Projects

AFC Renovation and Expansion Study

This study, anticipated to get underway early in FY 2000, will assess BART's fare collection capacity after the completion of the AFC/Translink project, analyze the sufficiency of BART's fare collection equipment to address the fare collection needs of the District, and evaluate the necessity and cost of expanding BART's existing fare collection system.

Service Improvements Study

This study will review the capacity of the existing system to meet the transit needs of BART passengers. Given recent rising ridership and the increasing demands on the system to carry more passengers longer distances, this study will assess the capacity enhancement needs of the BART system.

Thirty Year Capital Plan

BART's *Capital Improvement Program* only plans for ten years of capital requirements. However, much of BART's physical infrastructure has a useful life of twenty years or longer. This plan, when completed, will focus on BART's long range capital objectives and financial needs over thirty years and will feed into the MTC's regional, long-term planning document, the *Blueprint for the 21st Century*. The *Thirty Year Capital Plan*, anticipated to commence early in FY 2000, will be funded with operating funds.

Station Access and Station Area Development

BART staff is working with various communities and private developers to facilitate the creation of transit-oriented development at certain stations. Such development is intended to improve pedestrian access to stations and provide services, jobs, and housing within easy walking distance of stations. Such development would attract more passengers to BART, including off-peak riders and reverse commuters.

Projects Currently Underway

Additional Transit Centers

BART and AC Transit have entered into a Memorandum of Understanding in which AC Transit will pass federal Section 5307 funds through to BART to fund construction of transit centers at Fremont, Union City, South Hayward, Coliseum/Oakland Airport, Fruitvale, and West Oakland Stations.

Fruitvale Transit Village (Childcare Facility, Pedestrian Plaza, and Parking Structure)

BART is working with the Fruitvale Development Corporation (FDC) of the Spanish Speaking Unity Council on three components of the proposed Fruitvale Transit Village: a pedestrian plaza, a childcare facility, and a parking structure necessary to free up land for the Transit Village development. The plaza will consist of a 20-25,000 square foot public, landscaped "paseo" located on the east side of the station. It will provide a pedestrian corridor between the station and both the Fruitvale residential community and International Boulevard, which is lined with storefronts and has a great deal of pedestrian activity. Surrounding the plaza site, the FDC will construct a transit-oriented project that will feature housing, offices, retail, and community facilities and services, including the childcare facility, a community resource center, a medical clinic, and a senior center. The childcare facility will accommodate approximately 200 children and will enhance and encourage the use of public transit at the Fruitvale Station by providing a service to passengers of both BART and AC Transit. In order to free up land to accommodate the Transit Village, a parking structure and additional surface spaces will be constructed on the west side of the station. Together, they will provide enough parking to replace the surface spaces that will be lost when the Transit Village is developed on the east side. As a whole, the Transit Village will visually enhance the Fruitvale Station; provide transit-accessible jobs, services, and housing; and improve pedestrian access to BART and AC Transit.

16th Street/Mission Plaza Project

The two plazas above the 16th Street/Mission station function as entryways to the station and as important transfer centers for passengers connecting between BART and Muni. Over the years, however, the plazas have become a source of neighborhood concern over such issues as safety, aesthetics and public amenities. In response to this concern, BART and the Metropolitan Transportation Commission (MTC) have sponsored a series of community workshops focused on the two 16th Street/Mission plazas and led by the Mission Housing Development Corporation (MHDC), a non-profit developer of affordable housing. The product of these workshops is the 16th Street BART Community Design Plan, which establishes a blueprint for creating a safer and more active and vibrant public space at the 16th Street/Mission Station. The first phase of implementation of the plan has been funded and will focus on the reconstruction of the southwest plaza. This project will improve the safety and usability of the plaza through enhancements such as lighting, paving, landscaping, benches, and the removal of current barriers to pedestrian circulation and visibility. Partners in the implementation phase of the project include the San Francisco County Transportation Authority and MHDC. This project will also include new amenities for transit passengers, such as new and enlarged bus shelters and escalator covers to improve reliability.

Concord Access and Station Area Improvements

In 1998, MTC, the City of Concord, BART, and JFK University engaged in a planning study focused on improving pedestrian access to the station, as well as the pedestrian connection between the Concord BART Station and both a proposed JFK University campus and downtown Concord. The first phase of implementation of the plan has been funded by MTC and the City. The project will extend the City's downtown streetscapes to BART's entry and will implement other design improvements that will facilitate pedestrian access to BART and to downtown Concord. If funded, a later phase would construct the improvements to facilitate pedestrian access to the proposed JFK University campus.

Track One Future Projects

Bike Program

This project would improve bike access to BART by providing day-use bike lockers and other bicycle parking facilities at BART stations.

El Cerrito Plaza Access and Station Area Improvement

Contra Costa County Measure C provides $5.5 million in funding for BART passenger parking expansion at the El Cerrito Plaza Station. BART and the City are currently cooperating to determine the exact nature of this project. The scope, cost and schedule of this project will be finalized upon completion of that effort.

BART-SFO Extension Bicycle Trail and Other San Mateo County Improvements

In 1996 BART and SamTrans agreed to share the responsibility for construction of a bicycle trail along the BART-SFO Extension alignment. Understanding that it may not be possible to construct a trail contiguous with the alignment right-of-way, a study was launched earlier this year to evaluate alignment alternatives and overall project costs. SamTrans is funding the study. Upon completion of the study, the project will undergo preliminary engineering, environmental clearances, design and then construction. The trail is targeted to open at the same time as the BART-SFO Extension begins revenue service in late 2001.

Other improvements in San Mateo County are currently under development.

Dublin/Pleasanton Station Parking Expansion

This project would expand the existing parking lot at the Dublin/Pleasanton Station by adding 900 parking spaces. To complete this project, the District will acquire, clear and pave land for a surface parking lot.

Pittsburg/Bay Point Station Parking Expansion

This project would expand the existing parking lot at the Pittsburg/Bay Point Station by adding approximately 500 parking spaces. To complete this project, the District will acquire, grade and pave land for a surface parking lot.

Track Two Projects

Lafayette Access and Station Area Improvements

During the past few years, the City of Lafayette has worked with developers on plans for the Lafayette Town Center, a $30 million transit village project just south of the Lafayette BART Station that will include retail, 75 apartments and an office building. The new development will be entirely accessible to persons with disabilities, and the City will require the developer to provide facilities beyond those required by current law, including elevator access to each floor of the apartment units and "chirping" pedestrian signals. However, the southern entry to the Lafayette BART station is not accessible to people with disabilities. The proposed access project, to be sponsored by the City in partnership with BART, calls for the construction of a wheelchair-accessible ramp and a pathway leading from the south side of the BART station to the Town Center. Within the Town Center, a wheelchair-accessible walkway will provide a public right-of-way leading to Mt. Diablo Boulevard, Lafayette's main commercial thoroughfare.

Bayfair Access and Station Area Improvements

Alameda County, in concert with the City of San Leandro and BART, is seeking funds to improve the pedestrian and vehicular connection between the Bayfair Shopping Mall, a proposed cineplex, the Bayfair BART Station, and East 14th Street. The County, the City of San Leandro, and BART, together with the Mall management, have already participated in a preliminary design study that resulted in the development of cost estimates for the project.

Ashby/Ed Roberts Campus Project

BART and the City of Berkeley have executed a Memorandum of Understanding to provide development at the Ashby Station. The City subsequently transferred its control of air rights at the station to the Ed Roberts Campus (ERC), a consortium of nine organizations serving people with disabilities. The ERC will be conducting a conceptual design study for a proposed center that would consolidate services for people with disabilities at the Ashby BART Station. Partners in the project include BART and the City. The ERC, BART, and the City are negotiating a property exchange to enable the project to move forward.

24th Street/Mission Plaza Project

Like the plazas at the 16th Street/Mission station, the two plazas above the 24th Street/Mission station function as gateways to the station and as major transfer centers for passengers connecting between BART and Muni. Over the years, however, the plazas have become a source of community concern over such issues as security, aesthetics, and public amenity. BART, in partnership with the MTC, the SFCTA and the Mission Economic Development Association (MEDA), is focusing on the development of a design plan for the plazas at the 24th Street/Mission station. In addition to addressing concerns raised by the community, this plan will ensure that common elements on the plazas of both the 16th Street/Mission and 24th Street/Mission BART stations are developed in a consistent manner, helping to establish a strong identity for the Mission Street corridor, and reducing overall design costs.

Balboa Park Access and Station Area Improvements

The San Francisco Department of City Planning has identified various transit corridors throughout the City as candidates for the development of infill housing. Most of these are along Muni light rail lines or the BART line. Recently, the Planning Department has focused its attention on the area around the Balboa Park BART station because it has great potential for new development given the amount of developable land in the area owned by public agencies (Muni, City College, the Department of Public Works, and BART). The San Francisco Planning Department will be working with these agencies and BART on a study focused on strategies to encourage the development of infill, transit-oriented housing and to improve pedestrian access to the BART station and Muni light rail stops.

San Leandro Access and Station Area Improvements

The City of San Leandro is working with BART on a planning study focused on improving the pedestrian connection between the BART station and Downtown San Leandro, and on shifting the BART parking from the east to the west side of the station in order to allow housing to be built on BART property east of San Leandro Boulevard.

West Oakland Access and Station Area Improvements

The area surrounding the West Oakland BART station has been the focus of much recent activity related to the provision of housing and transit access improvements. The Oakland Housing Authority (OHA) has prepared an application for funding from the US Department of Housing and Urban Development (HUD) to rebuild the Westwood housing development, which is across the street from the West Oakland BART Station, into an expanded mixed-use/mixed-income development with private partnership. Also, a City-funded study of sites for the Mandela Transit Village has been completed recently, and the City will be studying strategies for revitalizing the 7th Street commercial corridor next to the station. Finally, BART is looking at strategies for improving access and attracting development, including the opportunities afforded by the recent availability of Union Pacific's railroad property. Before any development or access improvements can proceed, a number of planning activities would first need to be undertaken to ensure community support for any improvements and to assess the costs and financial feasibility of various improvements. BART, OHA and the City of Oakland Community and Economic Development Administration have therefore developed a scope of work for a planning study focused on the West Oakland BART Station and surrounding area.

Oakland Coliseum Access and Station Area Improvements

This project would create a multi-modal transportation hub to facilitate transfers and pedestrian access for users of BART, AC Transit, the current AirBART shuttle bus service to the airport, the proposed BART/Oakland Airport Connector, the planned Capitol Corridor rail service, the Oakland Coliseum Complex, and the surrounding commercial and residential developments. It would include improvements to the pedestrian bridge which links BART, the Coliseum, and the planned Capitol Corridor rail stop; increased pedestrian access to the BART station; bus intermodal improvements; more efficient passenger circulation on escalators and platforms; and security improvements. Possible partners in this project include the City of Oakland Community and Economic Development Administration, AC Transit, the Capitol Corridor Joint Powers Authority and its Citizens Advisory Committee, the Port of Oakland, the Elmhurst Property Owners Association, the Elmhurst Business Association, the Webster Housing development and the Coliseum Commerce Association.

Other Access and Station Area Improvement Projects

BART is conducting a station and system capacity study, analyzing a variety of potential improvements to station areas, which could facilitate customer access and enhance general station environment. Station area environment is also a primary focus of BART's Strategic Plan. These efforts are likely to result in proposed projects in addition to those specified above.

Locally-Sponsored Station Area Development

For the following projects, BART staff is working with local and regional jurisdictions to facilitate station area development. Station area development projects for which BART is or may be the official sponsor are listed in the *Station Access and Station Area Development* section of this chapter. BART is not the official sponsor of any of the following projects.

Richmond Access and Station Area Improvements

Funded by MTC and the State Transportation Improvement Program, this project will focus on enhancing pedestrian access to the station, as well as connecting the Richmond BART Station to both the planned Richmond Transit Village and Downtown. In its proposed location adjacent to the BART Station, the Richmond Transit Village will be a compact, mixed-use development covering 16 acres that includes housing, retail, offices, and a regional performing arts center.

MacArthur Station Area Improvements

A development company has requested exclusive negotiating rights from BART to expand the nearby Surgery Center over BART's parking lot. The Citizens' Planning Committee is reviewing the development proposal.

Other Station Area Development Projects

In addition to the station area improvement projects listed above, BART staff is currently working with local jurisdictions on various station area planning and joint development projects. At the Pleasant Hill station, BART and Contra Costa County are implementing a community site planning study to generate and assess preferred development scenarios. BART is also working with communities to create specific plans for transit-oriented development at the Pittsburg/Bay Point station and the planned Millbrae station. At the El Cerrito Del Norte Station, BART has selected a developer for a project that is expected to include housing and retail. Finally, at the Hayward Station, the City and BART have negotiated a land swap to facilitate the construction of housing as a supplement to previous station area development.

Additional Capacity Enhancement

Individual projects listed in this CIP are intended to accommodate anticipated passenger growth. This subprogram would go well beyond the basic program to accommodate substantial growth. This subprogram is conceptual and still under development, but could include additional transit vehicles, traction power and train control upgrades, reliability improvements, station circulation and access improvements and maintenance facilities expansion. The cost listed for this subprogram is a preliminary estimate.

RESEARCH, DEVELOPMENT & DEMONSTRATION

Projects Currently Underway

"CarLink" Station Cars

BART has been developing the station car concept for seven years. Station cars are automobiles that are used by several BART riders per day to give them access and egress to and from stations. Initially the focus was on electric vehicle technology. BART conducted a two and a half year program using forty electric vehicles imported from PIVCO (Personal Independent Vehicle Company) of Norway. A major conclusion of the program was that the sharing of cars was as environmentally important as the vehicle technology. "CarLink," a new car sharing/station car program, was launched in February 1999 at BART's Dublin/Pleasanton Station using twelve compressed natural gas cars from Honda. Soon BART will have station car services provided by rental car companies, using gasoline cars. One BART customer will drive the car from home to the station. Another BART customer will drive the car from the station to the work site. At the work site the car will be used as a corporate pool car. With revenue coming in from each of the several daily users, the station car market would become a major new opportunity for the rental car industry, as well as a mode for enhanced access to transit.

Superconducting Magnetic Energy Storage (SMES)

Two related projects are studying the technical and economic feasibility of utilizing SMES technology to minimize voltage sag problems in critical locations in the system. Addressing the voltage sag problem is critical to plans to operate trains with tighter headways to support projected future service levels. Multiple approaches are being pursued. A Federal Transit Administration (FTA) grant is currently funding a study to evaluate the feasibility of applying SMES to the BART system. Other possible approaches being considered for investigation include cryogenic power converters to control voltage output of existing substations and high temperature superconducting materials.

Chapter Four: The Context

FUNDING STRATEGY

INTRODUCTION

BART's *Capital Improvement Program* (CIP) includes all of the projects that the District would implement if adequate funding were available. The entire program totals $7.941 billion. Of this total, the Track One program, at a cost of $4.970 billion, is comprised of those projects for which potential sources of funding can be identified. The $2.971 billion balance of the program, Track Two, serves as the basis of advocacy and planning for increased levels of capital funding.

The following sections provide a snapshot of BART's funding picture. Each section pays particular attention to the specific funding plans of those projects that are significant in size, as well as describing the overall funding sources for each program. A summary of BART's Track One funding needs is provided in *Table 1*. A summary of the proposed funding sources for BART's Track One projects is provided in *Table 2*. *Table 3* lists the District's Track Two Systemwide Renovation, Service Improvement and Seismic Retrofit projects by tier. When additional funding becomes available for such Track Two projects, projects will be selected on the basis of their tier and their funding eligibility. Further funding need detail on all Track One and Track Two projects is outlined in *Chapter Five*.

SYSTEMWIDE RENOVATION PROGRAM

Track One is divided into two phases. Phase 1 is composed of those projects included in the District's original $1.1 billion renovation program, as outlined in Fiscal Year 1993. Phase 2 is composed of those projects outside of the original renovation program for which potential funding opportunities have arisen in large part due to the passage of the Federal Transportation Equity Act for the 21st Century (TEA-21) and to BART's projections of outyear federal grant funding. Most of these projects were listed in Track Two before such potential funding opportunities were identified by BART. The opportunity to advance these projects is driven by additional available grant funding in the region and the different funding criteria utilized for each grant program to award such funding to projects.

Progress in Renovation

For 20 years after the inception of rail service in 1972, BART was considered new and state-of-the-art. Reliability improved steadily even as service levels increased. By the early 1990's, however, the effects of aging began to surface. It is now apparent that BART stations, rail cars and the basic system infrastructure require more than just routine maintenance to continue operating reliably at increasingly higher levels of service. In 1993, BART evaluated the condition of the physical plant and developed a $1.1 billion initial phase program of renovation projects needed to return the system to near-original design standards. This systemwide renovation program is necessary to preserve BART as a critical transit mode in the Bay Area.

In 1994, as the magnitude of the program became known, BART and the Metropolitan Transportation Commission (MTC) began discussions on how to fund this initial program of critical renovation needs, resulting in the joint adoption of MTC Resolution 2672. The CIP that BART adopted in January 1995 outlined a set of projects and a funding strategy to implement a multi-year program to rebuild the system. Resolution 2672, which outlined a base level of grant programming and a series of planned BART bond issues over several years, formed the foundation of the program at a $650 million funding level. Other grants, BART funds and BART bond issues are anticipated to fund the remainder of the need.

Much of the funding for the renovation program has been secured and a sound financial plan to bring the rest of the program to fruition has been developed. Developments in the financial plan since publication of the last *Capital Improvement Program* are significant. The $650 million grant funding commitment in MTC's Resolution 2672 has been solidified with the programming of federal Section 5307, Section 5309 Fixed Guideway and formula funds between Fiscal Years 1997 and 2004. BART's obligation to internally generate $200 million in supplemental funding was achieved in March 1998 with the sale of a second bond issue (the first was in 1995) dedicated primarily to system renovation. Outside of the Resolution 2672 framework, BART and its funding partners secured additional grant commitments totaling $24 million for the Automatic Fare Collection Equipment/Translink Implementation project during FY 1999.

Remaining Challenges in Renovation

The remaining financial challenges include the need for BART and MTC to secure the grants now programmed in support of Resolution 2672. BART will issue a third series of sales tax revenue bonds that will contribute another $142 million to the overall $1.572 billion renovation program. BART also plans to generate a total of $108.7 million in operating funds for direct allocation to the capital program during the period Fiscal Years 2000 through 2010, in addition to the $49.4 million already generated between FY 1997 and FY 1999.

Generation of Grant Funds

In May 1994, BART and MTC jointly adopted MTC Resolution 2672, a cooperative funding agreement designed to address BART's most critical renovation needs. The agreement calls for MTC to program $450 million in federal, state, and regional funds for BART renovation, and for BART to generate $200 million as local match to the proposed grant funds.

The grant funding plan originally set forth in Resolution 2672 anticipated MTC programming its entire $450 million commitment over the six-year period FY 1994 through FY 2000. Subsequent reductions in Congressional appropriations of transit system funding led MTC to extend its forecast of funds expected to be available to the Bay Area region, and therefore to BART, over the period of this CIP. With the passage of TEA-21, Congress authorized additional funds to be allocated to the San Francisco Bay Area through the Federal Formula Program. With the infusion of these funds to the region, MTC currently projects that it will complete the remainder of its Resolution 2672 commitment to BART by 2004.

Since the adoption of Resolution 2672, BART and MTC have continued to jointly pursue additional grant funding for the balance of the renovation program above the $650 million outlined in Resolution 2672. As the financial program has evolved, grant sources will make up more than the $450 million identified in Resolution 2672. The majority of these additional funds will be programmed between FY 2005 and FY 2010 from both federal formula and flexible fund sources.

Generation of BART Funds

The CIP adopted in January 1995 (FY 1996-2005) outlined the need for BART to issue bonds to match and supplement grants for the Systemwide Renovation Program. That CIP proposed bond issues for the springs of 1995, 1997, 1998 and 1999 to generate a total of approximately $400 million. The source of debt service funds for this planned borrowing was proposed as a series of fare increases in 1995, 1996 and 1997 to fund the first $200 million with bonds. Future revenue enhancement and/or cost reductions funded the last $200 million. Three fare increases have been implemented as planned. BART has now more than met its Resolution 2672 match commitment.

The first bond issue was sold in May 1995, netting $130 million. The second bond issue was not needed as early as forecast in the 1995 CIP, and was sold in March 1998, combining the planned 1997 and 1998 issues. This produced $218 million for capital projects, of which $130 million was used for renovation. In combination, therefore, BART has generated $260 million for renovation, exceeding the required commitment under Resolution 2672 by $60 million. The last of the bond issues outlined in BART's *FY 1995 Capital Improvement Program* is required to complete the A/B Car Renovation Program and is currently expected to be issued during FY 2000 to generate approximately $142 million of bond proceeds, based on current interest rates.

Financial projections carried in the companion document Short Range Transit Plan (SRTP) indicate that the combined debt service for all of the bond issues can be sustained with the revenue produced by the series of three fare increases already implemented.

In addition to the bond issues, the funding program has for several years included direct allocations from the operating budget to the capital program. Between FY 1997 and FY 1999, $49.4 million was allocated from the operating to the capital budget. The Fiscal Year 2000 Short Range Transit Plan forecasts operating allocations of $108.7 million to the capital plan over the period from FY 2000 to FY 2010, bringing the total program of allocations from the operating plan to $158.1 million between FY 1996 and FY 2010.

Funding Strategies by Program

As noted above, BART has defined a program of essential renovation requiring $1.572 billion between inception of the program adopted in 1995 and the end of this CIP timeframe (FY 2010). The proposed funding sources are summarized in *Table 2*. Details for several major elements of the program are described in the following section.

A- and B-Car Renovation Program

The largest single component of the systemwide renovation program is the rebuilding of the original fleet of A- and B-cars to extend their useful lives. The budget for this effort is $454.4 million. The funding program jointly adopted by BART and MTC for this project includes the programming of $239.5 million in federal Section 5309 Fixed Guideway funds, $30 million in federal STP and CMAQ funds, almost $17 million in state Proposition 108 and TCI funds, and $24 million in bridge toll funds. The funding plan requires BART to provide the balance of the funding, or approximately $144 million. To date, BART has committed $8.3 million. The rest of BART's commitment will come from the Fiscal Year 2000 sales tax revenue bond issue and BART reserves.

The funding plan for this project is covered by a Federal Transit Administration (FTA) Letter of No Prejudice (LONP), which permitted BART to execute a contract for performance of renovation work in advance of actual receipt of most of the grant funds. The contract is comprised of a base order for renovation of the first 200 cars, fully covered by the LONP. BART has also contracted for the remaining 239 cars with annual cancellation clauses in the event that funding is not available.

Automatic Fare Collection Equipment Modernization / Translink Implementation

After 25 years in service, BART's automatic fare collection equipment must be modernized through a combination of replacement and renovation. In conjunction with MTC, BART has developed a financial plan to fully fund this project, currently estimated to cost $77.776 million. As part of MTC's Resolution 2672 commitment, $21.259 million in federal Section 5307 funds are programmed to be granted to the project by the end of FY 1999. In addition, MTC programmed an additional $24 million of federal Section 5309FG funds for the project in FY 1999. Also this year, the Alameda County and Contra Costa County Congestion Management Authorities programmed an additional $4.5 million of STIP and STP/CMAQ funds for the project, contingent upon San Francisco Transportation Authority's programming of $1.5 million in FY 2000. BART is seeking additional grant funds, including State Transportation Improvement Program (STIP) and federal STP funds over the next several years. BART revenues will be required to provide local match and supplemental funding to grants.

Rail Replacement

As train wheels grind against rail, especially on curves, the rail gradually wears away and must be replaced. In addition to the $10.9 million already programmed between FY 1996 and FY 1999, MTC programming under Resolution 2672 includes annual increments totaling $18.7 million in Section 5307 by FY 2004. The CIP also projects the receipt of Section 5307 grant funds between FY 2007 and FY 2010 in the total amount of $12.75 million. BART will be required to provide local match and possible supplemental funding to these periodic grants. Local match could come in the form of bridge tolls programmed by MTC.

Midlife Overhaul of C-1 Cars

The overhaul of C-1 vehicles at the mid-span of their design life will reduce future maintenance costs and greatly improve the reliability and comfort of the cars, encouraging additional BART ridership. BART currently has programmed approximately $15 million of allocations from the operating to the capital budget between FY 1999 and FY 2000 to fund this project. Additional funding may be sought in the region or within BART for supplementary midlife renovation of these cars.

Traction Power System Renovation

Traction power is the electricity that operates the motors that propel BART trains. The traction power system includes rectifiers, circuit breakers, cabling, and other components that have deteriorated with use and the passage of 25 years of service. This deterioration poses risks to reliable service delivery. BART has already allocated $11 million in bond and other BART funds in FY 1998 and FY 1999 to begin this major project. MTC programming under Resolution 2672 and transit capital priorities includes a total of $36.4 million in Section 5307 and Section 5309FG funds over the period of FY 2000 through FY 2004 to continue the project. Additional Section 5309FG funds in the amount of $27 million are projected for this project between FY 2007 and FY 2010. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these periodic grants.

Wayside Train Control System Renovation

The electronic components and circuitry that control the speed and switching of trains was state-of-the-art when the system opened for service. But many of these critical parts are now worn, unreliable, obsolete and very costly to maintain. This project will replace components and subsystems as necessary to keep BART train control safe and reliable. BART has already allocated $4.802 million of bond funds to initiate the project. MTC programming under Resolution 2672 included $4 million of federal Section 5307 grant funds in FY 1999 and a total of $33.4 million of Section 5307 funds over the period FY 2000 through FY 2004. Additional Section 5307 funds in the amount of $22.1 million are being sought for FY 2007 through FY 2010 to continue funding this project. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these periodic grants.

Advanced Automatic Train Control

This project is integral to BART's proposed future service plans, and also will reduce the need for a significant amount of renovation that would have been required on the existing train control system. The research and development phase is being carried out with a combination of federal defense conversion funds, matched by private sector and BART funds. Grant funding in the amount of $47.1 million for implementation of AATC on the M- and upper A-lines has been programmed by MTC from state and federal sources. BART has generated the local match to this grant.

Additional funding for future phases of AATC, including the development and implementation of complementary technology, central computer software development and implementation of AATC on the remainder of the core system, are planned to be funded with federal Section 5307 and Section 5309FG funds. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these grants.

Escalator and Elevator Program

Replacement of many of the most critical station escalators, and complete renovation of other escalators and station elevators systemwide are among BART's highest priority renovation programs. These programs, totaling over $50 million, have not competed well for grant funds in the past, so these efforts are expected to be carried out primarily with BART revenues. Grant sources will continue to be pursued as possible. However, these projects must be carried out immediately and are being funded from BART sources as necessary to keep them progressing.

Other Track One Systemwide Renovation Projects

Renovation of the remainder of the BART infrastructure (stations, power and train control systems, maintenance facilities, etc.) is being accomplished through a variety of funding sources. Through Resolution 2672, MTC has pledged to program $140 million, to be matched by $56.6 million from BART. BART's $56.6 million match is being provided from the proceeds of the 1995 bond sale. Other grant sources and BART revenues are programmed for the remaining balance.

Track Two Systemwide Renovation Projects

Additional renovation funding needs beyond what is reasonably forecast to become available are also presented in this CIP, at a conceptual planning level. The Track Two renovation program comprises projects that would be highly desirable to accomplish within the next ten to fifteen years, but that are not at this time considered essential to reliable operation of future service levels. The Track Two renovation program is estimated at $2.305 billion, including a comprehensive renovation of BART's C-1 cars and additional mainline, station, controls & communication and facility renovation.

EXTENSIONS PROGRAM

From the earliest days of its planning, the BART system has been envisioned by many as an expansive network of lines which ultimately would link most of the counties in the greater San Francisco Bay Area region. Limitations on funding restricted the original construction to 71.5 miles of double track in San Francisco, Alameda, and Contra Costa counties. BART did not lose sight of plans for extension of the original system.

In the mid-1980's several Bay Area counties began to explore the possibility of funding various transportation improvements, including BART extensions, through increases in voter-approved sales taxes. BART was granted significant funding from sales taxes in Alameda and Contra Costa counties, and from state and other sources, for extensions in those two counties. In Contra Costa County, an extension from the former end of the line at Concord now continues to new stations at North Concord-Martinez and Pittsburg/Bay Point. In Alameda County, the new branch line from Bay Fair Station to Castro Valley and Dublin/Pleasanton was built. Federal grants, state grants, and San Mateo County Transit District funds were simultaneously secured for an extension to Colma Station in San Mateo Country. All of these projects have entered service in the last three years.

BART-SFO Extension

This extension of the BART rail system is from the new Colma Station to San Francisco International Airport and the city of Millbrae. It will include four stations at the following locations: Hickey Boulevard in South San Francisco, Tanforan Park Shopping Center in San Bruno, Millbrae Avenue in Millbrae, and at the new San Francisco Airport International Terminal. In addition to mainline services to Millbrae and SFO, BART trains will be dedicated to shuttle service between the Millbrae and SFO stations. The intermodal Millbrae station itself will include a cross-platform connection with Caltrain.

A Full Funding Grant Agreement with the Federal Transit Administration was secured for this project in June 1997. The funding plan for this project includes $750 million in federal Section 5309 New Rail Starts funds, $152 million in State funds, $26.5 million in Bay Area bridge tolls from MTC, $200 million from the Airport, $171 million from SamTrans, $2 million from the San Mateo County Flood Control District, $141.7 million from BART funds and up to $70 million FFGA scope substitution. Included in the $1.5132 billion budget is a $79.2 million Capital Reserve Account to be funded with a combination of direct allocations from the operating budget and a series of two bond issues, currently anticipated to occur in Fiscal Years 2000 and 2002.

Warm Springs/Santa Clara Phase I Extension

This planned $546 million extension, as reflected in this CIP, would extend from the current end of line at Fremont Station to two new stations at Irvington and Warm Springs in southern Alameda County. This project is listed partially in the Track One program in the amount of $185.8 million based on existing regional funding commitments from a variety of sources. The $360.3 million balance of the project cost is listed in Track Two pending identification of additional funding sources.

Oakland Airport Connector

This planned $129.9 million extension would extend in an aerial alignment from the existing Oakland Airport-Coliseum Station to the Oakland Airport in Alameda County. This project is listed partially in the Track One program in the amount of $4 million to be funded from the 1998 State Transportation Improvement Program for preliminary engineering and environmental work. The $125.9 balance of the project cost is listed in Track Two pending identification of additional funding sources.

West Dublin/Pleasanton Station

This planned $39.4 million project would build the third station originally planned for the Castro Valley-Dublin-Pleasanton Extension in Alameda County. This project is listed in the Track Two program. A negotiated procurement process is currently being implemented to identify and analyze potential funding mechanisms, including possible real estate development opportunities for the construction of the station.

Pittsburg-Railroad Avenue Station

This planned $200 million project would extend the new Pittsburg/Bay Point segment further east in Contra Costa County, to a new station at Railroad Avenue. A portion of this project is listed in the Track One program on the basis of remaining funds from Contra Costa County's transportation sales tax, along with other funding sources. BART will continue to seek funding for the balance of the project, which continues to be listed in Track Two.

SEISMIC RETROFIT PROGRAM

The original BART system was built in the late 1960's to standards far in excess of building codes of that time. BART survived the major Loma Prieta earthquake of 1989 with only very minor damage, and returned to full service in a matter of hours. Since the 1960's much has been learned about how large structures such as BART facilities perform in major seismic events. Upgrades are now known to be technically feasible that would allow the system to withstand major earthquakes in the immediate vicinity of BART structures with the ability to resume service in a minimum amount of time.

At this time, the bulk of the $795 million Seismic Retrofit Program is listed in Track Two pending identification of funding sources. A first increment in the amount of $197.5 million is listed in Track One. Caltrans is currently funding a study to evaluate the project scope and cost for *Segment I: Caltrans Local Seismic Retrofit Program*. $170 million is an estimate of the cost to retrofit portions of the BART system that cross over local streets and roads. BART has allocated $1.2 million to commence design work on this project. The remaining $24.7 million Track One increment is being sought from Section 5307 grant funds.

The District is continuing to review and pursue funding options for the $597.5 million Track Two portion of the Seismic Retrofit Program. Potential funding options include Federal and State grant funds, general obligation bonds, sales tax revenue bonds and other financing mechanisms.

SERVICE IMPROVEMENT PROGRAM

BART's commitment to the needs of its passengers and of Bay Area communities shapes a meaningful Service Improvement Program. Through this program, BART works with its funding and community partners to better serve the transit needs of the Bay Area. BART serves its customers and local communities by facilitating intermodal connections and station access, by fostering transit-oriented development and by implementing the upgrades and improvements necessary to sustain BART's service standards in the face of increasing capacity.

One way in which BART and other transit improve regional transit service is by providing intermodal transit connections and facilities that promote non-automobile access to transit. BART and AC Transit have entered into a Memorandum of Understanding the terms of which allow AC Transit to pass through to BART federal funds and local match for construction of intermodal transit center improvements at eight stations. Last year, the Bay Area Air Quality Management District provided funds for a $704,000 program to improve the quality of bicycle access to BART stations. Additional Air District grant funds will be pursued to expand opportunities for bicycle access to the system. A combination of BART and grant funds are supporting prototype development and initial deployment of a "Pathfinder" sign program to help patrons find their way between stations and nearby facilities.

In addition to these intermodal and access projects, BART is a partner in three Track One station area improvement projects intended to enhance pedestrian access through transit-oriented development and other physical enhancements. The Fruitvale Transit Village project will include a childcare facility funded with $2.3 million from FTA's Livable Communities Initiative and $575,000 provided by the Spanish Speaking Unity Council (SSUC), a non-profit community-based organization that is BART's partner in the Fruitvale Transit Village. The other components of the project directly involving BART are the Pedestrian Plaza and the Replacement Parking. The Pedestrian Plaza is funded with $780,000 in Federal Transportation Enhancement Activities funds and $450,000 worth of in-kind contributions in the form of land and staff time from BART. The Replacement Parking is funded with $7.65 million from the State Transportation Improvement Program (STIP) and $800,000 provided by the SSUC. Also, the SSUC has acquired another $10.8 million for different components of the Transit Village from HUD, the EPA, the US Department of Commerce, and the City of Oakland, in addition to $21.6 million in privately-raised funds.

Other Track One station area improvement projects are the 16th Street/Mission Plaza Project and the Concord BART Streetscape and Pedestrian Access Improvements Project. These are funded primarily from the Metropolitan Transportation Commission's Transportation for Livable Communities (TLC) Program, which provides funding for community-oriented transportation projects throughout the nine-county Bay Area. The 16th Street/Mission Plaza Project is funded with $1.7 million from MTC, $130,000 from BART, and $130,000 from the San Francisco County Transportation Authority. The Concord BART Streetscape and Pedestrian Access Improvements Project is funded with $500,000 from TLC and additional funds from the City of Concord.

Funds are programmed to implement maintenance facilities upgrade and expansion in the amount of $52 million. These improvements are necessary to enable BART to meet escalating capacity requirements.

In 1996 BART and SamTrans agreed to share the responsibility for construction of a bicycle trail along the BART-SFO Extension alignment. A study was launched earlier this year to evaluate overall project costs. SamTrans is funding the study. BART and SamTrans have each committed up to $1 million for construction. Costs, if any, beyond $2 million are the responsibility of SamTrans. The San Mateo County Congestion Management Agency has committed to allocating $2 million of STIP funds to BART for improvements within San Mateo County. The STIP funds will likely be used to fund BART's portion of the bike trail costs, as well as other improvements in San Mateo County that are currently under development.

In addition to these Track One Service Improvement projects, the CIP also includes several proposed Track Two projects, including further deployment of the Pathfinder sign program, possible station area improvements at various stations, traction power system upgrades and other projects that could significantly improve BART operations and/or expand BART capacity.

For the Track Two station area development projects (e.g., West Dublin, Oakland Coliseum, West Oakland and Balboa Park), there are three major grant funding sources that can be used to support these projects. For Fiscal Year 1999, the TLC Program provides $365,000 for community-based planning and technical assistance in addition to the capital funds already awarded to the above projects. For Fiscal Year 2000, the funding levels for planning and technical assistance have not yet been announced. Transportation Enhancements Activities (TEA) is a federal program that funds primarily pedestrian, bicycle, landscaping, and historic preservation transportation projects. TEA provides $48 million over a six-year period (1999-2004) to the nine-county Bay Area, half of which will go into a regional discretionary funding program administered by MTC and half of which will be distributed among the nine counties on a formula basis. In Fiscal Year 1999, $4 million in Regional Discretionary Funding was added to the $5 million already designated for the TLC Capital Program. Similar funding levels are expected for the TLC Capital Program in fiscal year 2000. Finally, the Transportation and Community and System Preservation (TCSP) Pilot Program provides $25 million nationwide in Fiscal Year 2000 for planning and capital projects to address the relationship between transportation investments, land development patterns and environmental protection.

RESEARCH, DEVELOPMENT AND DEMONSTRATION

BART continues to work in various R&D areas with prior grant funds, including Station Cars and Superconducting Magnetic Energy Storage. Prior allocation of BART funds are being used to study possible advances in Adaptive Diagnostic Systems for improved transit vehicle reliability and faster, more efficient vehicle maintenance. In FY 2000, BART will allocate an additional $0.5 million to continue the funding for its R&D program. BART will continue to seek grant funding for technological advances from specialized sources for which basic system renovation and expansion projects are not eligible.

Table 1

Track One Program – Funding Needs

All figures in thousands of dollars (three decimals places dropped).

Project	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
SYSTEM RENOVATION PROGRAM												
Rolling Stock												
Phase 1	465,082	266,579	198,503	89,139	82,164	22,600	4,600	0	0	0	0	0
Phase 2	14,984	10,000	4,984	4,984	0	0	0	0	0	0	0	0
Subtotal Rolling Stock	***480,066***	***276,579***	***203,487***	***94,123***	***82,164***	***22,600***	***4,600***	***0***	***0***	***0***	***0***	***0***
Mainline												
Phase 1	106,682	59,811	46,871	6,238	5,667	3,240	3,324	9,249	9,412	9,741	0	0
Phase 2	100,796	1,048	99,748	6,893	4,371	6,753	8,115	17,644	1,865	1,017	12,141	40,949
Subtotal Mainline	***207,478***	***60,859***	***146,619***	***13,131***	***10,038***	***9,993***	***11,439***	***26,893***	***11,277***	***10,758***	***12,141***	***40,949***
Stations												
Phase 1	214,504	142,039	72,465	15,340	7,040	5,435	5,780	4,071	4,000	4,000	11,000	15,800
Phase 2	118,889	4,040	114,849	1,000	0	0	0	6,000	10,500	28,150	7,875	61,324
Subtotal Stations	***333,393***	***146,079***	***187,314***	***16,340***	***7,040***	***5,435***	***5,780***	***10,071***	***14,500***	***32,150***	***18,875***	***77,124***
Controls & Communications												
Phase 1	255,383	154,234	101,149	43,997	12,450	17,167	6,545	6,734	6,383	6,588	500	785
Phase 2	162,890	212	162,679	2,435	201	10,228	10,256	19,886	15,746	246	31,556	72,123
Subtotal Controls & Communications	***418,274***	***154,446***	***263,828***	***46,432***	***12,651***	***27,395***	***16,801***	***26,620***	***22,129***	***6,834***	***32,056***	***72,909***
Facility Renovation and Replacement												
Phase 1	46,086	24,663	21,423	4,404	2,175	2,225	3,305	3,375	3,424	2,515	0	0
Phase 2	13,281	21	13,260	0	0	0	0	0	0	0	2,590	10,670
Subtotal Facility Renovation & Replacement	***59,367***	***24,684***	***34,683***	***4,404***	***2,175***	***2,225***	***3,305***	***3,375***	***3,424***	***2,515***	***2,590***	***10,670***
Work Equipment												
Phase 1	37,941	11,871	26,070	3,150	3,340	3,530	3,720	3,910	4,110	4,310	0	0
Phase 2	34,831	0	34,831	100	1,066	110	115	120	434	628	5,277	26,981
Subtotal Work Equipment	***72,772***	***11,871***	***60,901***	***3,250***	***4,406***	***3,640***	***3,835***	***4,030***	***4,544***	***4,930***	***5,277***	***26,981***
SUBTOTAL SYSTEM RENOVATION PROGRAM	***1,571,350***	***674,518***	***896,831***	***177,680***	***118,474***	***71,288***	***45,760***	***70,989***	***55,874***	***57,195***	***70,939***	***228,633***
EXTENSIONS PROGRAM - Phase 1												
to Colma (FFGA)	170,179	170,179	0	0	0	0	0	0	0	0	0	0
to Dublin-Pleasanton	543,050	543,050	0	0	0	0	0	0	0	0	0	0
to Pittsburg-Bay Point	505,740	505,740	0	0	0	0	0	0	0	0	0	0
to San Francisco International Airport (SFO)	1,513,200	1,439,300	73,900	26,800	0	47,100	0	0	0	0	0	0
to Warm Springs	185,800	19,700	166,100	4,000	4,000	4,500	7,900	11,500	19,900	19,500	0	94,800
Oakland Airport Connector	4,000	4,000	0	0	0	0	0	0	0	0	0	0
Pittsburg-Bay Point to Railroad Ave.	60,000	60,000	0	0	0	0	0	0	0	0	0	0
SUBTOTAL EXTENSIONS PROGRAM	***2,981,969***	***2,741,969***	***240,000***	***30,800***	***4,000***	***51,600***	***7,900***	***11,500***	***19,900***	***19,500***	***0***	***94,800***
SEISMIC RETROFIT PROGRAM - Phase 2												
Caltrans Local Seismic Retrofit Program	171,200	0	171,200	171,200	0	0	0	0	0	0	0	0
Seismic retrofit projects	26,276	336	25,940	9,240	8,600	8,100	0	0	0	0	0	0
SUBTOTAL SEISMIC RETROFIT PROGRAM	***197,476***	***336***	***197,140***	***180,440***	***8,600***	***8,100***	***0***	***0***	***0***	***0***	***0***	***0***
SERVICE IMPROVEMENT PROGRAM												
Service Improvement Program- Phase 1												
Phase 1	67,197	46,743	20,454	14,954	5,500	0	0	0	0	0	0	0
Phase 2	46,691	14,180	32,511	12,398	5,200	4,617	4,416	0	0	5,880	0	0
SUBTOTAL SERVICE IMPROVEMENT PROGRAM	***113,888***	***60,923***	***52,965***	***27,352***	***10,700***	***4,617***	***4,416***	***0***	***0***	***5,880***	***0***	***0***
RESEARCH, DEVELOPMENT & DEMONSTRATION												
Phase 1	4,243	4,243	0	0	0	0	0	0	0	0	0	0
Phase 2	500	0	500	500	0	0	0	0	0	0	0	0
SUBTOTAL RESEARCH, DEVELOPMENT & DEMONSTRATION	***4,743***	***4,243***	***500***	***500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
OTHER FINANCIAL OBLIGATIONS												
Phase 1	100,041	99,481	560	80	80	80	80	80	80	80	0	0
Phase 2	320	0	320	0	0	0	0	0	0	0	80	240
			0									
SUBTOTAL OTHER FINANCIAL OBLIGATIONS	***100,361***	***99,481***	***880***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***240***
TOTAL TRACK ONE FUNDING NEEDS	4,969,786	3,581,470	1,388,315	416,852	141,854	135,685	58,156	82,569	75,854	82,655	71,019	323,673

Table 2

Track One Program -- Funding Sources

All figures in thousands of dollars (three decimals places dropped)

Project	Total Program	Allocated to 6/30/99	Amount to be Allocated	Fiscal Year Programmed 2000	2001	2002	2003	2004	2005	2006	2007	2008-10
SYSTEM RENOVATION PROGRAM												
MTC RESOLUTION 2672												
Federal Section 5309FG	279,847	263,560	16,287	0	0	0	0	16,287	0	0	0	0
Federal Section 5307	89,782	36,795	52,987	10,950	10,394	16,816	11,728	3,100	0	0	0	0
CMAQ/STP	30,000	20,000	10,000	0	5,000	5,000	0	0	0	0	0	0
State Proposition 108	15,000	15,000	0	0	0	0	0	0	0	0	0	0
State TCI	2,322	2,322	0	0	0	0	0	0	0	0	0	0
MTC Bridge Tolls	33,076	20,000	13,076	6,122	1,966	2,477	2,512	0	0	0	0	0
GRANT FUNDING PER MTC RESOLUTION 2672	*450,027*	*357,677*	*92,350*	*17,071*	*17,359*	*24,293*	*14,240*	*19,387*	*0*	*0*	*0*	0
1995 Bond Proceeds	90,470	90,470	0	0	0	0	0	0	0	0	0	0
1998 Bond Proceeds	113,332	112,267	1,065	1,065	0	0	0	0	0	0	0	0
TOTAL FUNDING PER MTC RESOLUTION 2672	*653,829*	*560,414*	*93,415*	*18,136*	*17,359*	*24,293*	*14,240*	*19,387*	0	0	*0*	0
Federal Section 5309FG	158,826	0	158,826	0	0	0	0	0	15,503	16,587	31,400	95,336
Federal Section 5307	79,496	2,766	76,730	0	0	3,680	10,060	12,404	7,743	7,989	8,269	26,585
CMAQ/STP	98,843	0	98,843	4,073	5,870	8,500	0	12,480	11,600	11,600	12,300	32,420
State TCI	1,525	1,525	0	0	0	0	0	0	0	0	0	0
State STIP	71,287	0	71,287	43,157	0	0	0	4,900	5,980	3,250	3,500	10,500
MTC Bridge Tolls	70,142	1,912	68,231	616	633	2,647	2,935	11,068	8,712	9,044	6,742	25,835
1998 Bond Proceeds	34,796	33,202	1,594	260	0	1,101	233	0	0	0	0	0
Planned 1999 Bond Proceeds	129,800	0	129,800	129,800	0	0	0	0	0	0	0	0
Interest Earnings	13,099	9,099	4,000	4,000	0	0	0	0	0	0	0	0
Reimbursement	1,579	630	949	949	0	0	0	0	0	0	0	0
Private Sector Financing	11,000	11,000	0	0	0	0	0	0	0	0	0	0
Previous Reserves	69,502	59,848	9,654	2,970	6,684	0	0	0	0	0	0	0
Miscellaneous Grants	49,135	49,135	0	0	0	0	0	0	0	0	0	0
Allocations from Operating	128,492	20,992	107,500	9,307	8,789	6,406	9,107	9,644	8,837	8,724	8,727	37,960
TOTAL FUNDING NOT MTC RESOLUTION 2672	*917,521*	*190,108*	*727,413*	*195,132*	*21,975*	*22,333*	*22,335*	*50,496*	*58,374*	*57,194*	*70,938*	*228,636*
SUBTOTAL SYSTEM RENOVATION PROGRAM	1,571,350	750,522	820,828	213,268	39,334	46,627	36,575	69,883	58,374	57,194	70,938	228,636
SERVICE IMPROVEMENT, RESEARCH & DEVELOPMENT AND OTHER FINANCIAL OBLIGATIONS												
Federal Section 5309FG	4,704	0	4,704	0	0	0	0	0	0	4,704	0	0
CMAQ/STP	6,000	0	6,000	0	6,000	0	0	0	0	0	0	0
STATE TCI	348	348	0	0	0	0	0	0	0	0	0	0
State STIP	2,000	0	2,000	2,000	0	0	0	0	0	0	0	0
MTC Bridge Tolls	1,176	0	1,176	0	0	0	0	0	0	1,176	0	0
1995 Bond Proceeds	39,882	36,922	2,960	2,960	0	0	0	0	0	0	0	0
1998 Bond Proceeds	57,472	57,472	0	0	0	0	0	0	0	0	0	0
Planned 1999 Bond Proceeds	12,200	967	11,233	0	3,600	4,617	3,016	0	0	0	0	0
Interest Earnings	19,233	17,003	2,230	630	1,600	0	0	0	0	0	0	0
1995 Cross Border Lease	2,665	2,665	0	0	0	0	0	0	0	0	0	0
Previous Reserves	9,698	9,698	0	0	0	0	0	0	0	0	0	0
Miscellaneous Grants	42,923	34,623	8,300	0	8,300	0	0	0	0	0	0	0
Allocations from Operating	20,690	17,610	3,080	1,350	550	540	80	80	80	80	80	240
SUBTOTAL SERVICE IMPROVEMENT, R&D AND OTHER FIN. OB.	218,992	177,308	41,684	6,940	20,050	5,157	3,096	80	80	5,961	80	240
SEISMIC RETROFIT PROGRAM												
Federal Section 5307	19,760	0	19,760	6,400	6,880	6,480	0	0	0	0	0	0
MTC Bridge Tolls	4,940	0	4,940	1,600	1,720	1,620	0	0	0	0	0	0
Interest Earnings	1,000	0	1,000	1,000	0	0	0	0	0	0	0	0
Miscellaneous Grants (Caltrans Local Seismic Retrofit Program)	170,336	336	170,000	170,000	0	0	0	0	0	0	0	0
Allocations from Operating	1,440	0	1,440	1,440	0	0	0	0	0	0	0	0
SUBTOTAL SEISMIC RETROFIT PROGRAM	197,476	336	197,140	180,440	8,600	8,100	0	0	0	0	0	0
EXTENSIONS PROGRAM												
Funding for Colma extension (FFGA)	170,179	170,179	0	0	0	0	0	0	0	0	0	0
Funding for Dublin-Pleasanton extension	543,050	543,050	0	0	0	0	0	0	0	0	0	0
Funding for Pittsburg-Bay Point extension	505,740	505,740	0	0	0	0	0	0	0	0	0	0
Funding for San Francisco Airport extension (SFO) [1]	1,421,500	1,421,500	0	0	0	0	0	0	0	0	0	0
Dedicated bond issue for SFO CAPRA	71,700	0	71,700	24,600	0	47,100	0	0	0	0	0	0
Allocations from Operating for SFO CAPRA	7,500	5,300	2,200	2,200	0	0	0	0	0	0	0	0
Power Substation for SFO (1998 Bond Proceeds)	12,500	12,500	0	0	0	0	0	0	0	0	0	0
Funding for Warm Springs extension	185,800	19,700	166,100	4,000	4,000	4,500	7,900	11,500	19,900	19,500	0	94,800
Funding for Oakland Airport connector	4,000	4,000	0	0	0	0	0	0	0	0	0	0
Existing Measure C funding for Bay Point to Railroad Ave. extensi	60,000	60,000	0	0	0	0	0	0	0	0	0	0
SUBTOTAL EXTENSIONS PROGRAM	2,981,969	2,741,969	240,000	30,800	4,000	51,600	7,900	11,500	19,900	19,500	0	94,800
TOTAL TRACK ONE PROGRAM	4,969,786	3,670,135	1,299,652	431,448	71,984	111,484	47,571	81,463	78,354	82,655	71,018	323,676

Table 3

Track Two Program – Funding Needs

All figures in thousands of dollars (three decimal places dropped).

TIER PROGRAM AREA PROJECT	FUNDING REQUIREMENT *
TIER ONE	
ROLLING STOCK	
Fleet upgrades	18,000
Security cameras installation in A & B cars	6,000
MAINLINE	
STATIONS	
CONTROLS & COMMUNICATIONS	
FACILITY	
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
SEISMIC RETROFIT	
Seismic Retrofit Program Segment I - Caltrans Local Seismic Retrofit Program (BART Share)	13,800
Seismic Retrofit Program Segment II - Lifeline Program	145,300
Seismic Retrofit Program Segment III (Additional Critical Aerial Structures and Stations)	125,000
TOTAL TIER ONE	**308,100**
TIER TWO	
ROLLING STOCK	
C-1 car renovation	318,000
MAINLINE	
STATIONS	
Replace platform edge detectable warning system at 20 core stations	4,800
Rehab. garage and other elevators (includes LMA)	3,600
Replace North Berkeley Station ceiling	1,284
General station renovation	15,000
CONTROLS & COMMUNICATIONS	
FACILITY	
Rehabilitation of TransBay Tube facility	1,200
Car wash facility replacement at Concord & Hayward	8,400
Additional storage facilities	9,720
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
24th Street / Mission access and station area improvements	0
Lafayette access and station area improvements	0
West Oakland access and station area improvements	0
SEISMIC RETROFIT	
TOTAL TIER TWO	**362,004**

* Note: All Track Two figures are current estimates in 1999 dollars.

Table 3 (continued)

Track Two Program – Funding Needs (continued)

All figures in thousands of dollars (three decimal places dropped).

TIER PROGRAM AREA PROJECT	FUNDING REQUIREMENT *
TIER THREE	
ROLLING STOCK	
MAINLINE	
Dry standpipes at I-680 and Springbrook crossings	444
Remove gaps in handrails and obstructions on emergency walkways	2,400
STATIONS	
General station renovation (FY00 cleanup incl. relamp & paint)	3,400
Replace hydraulic lift cylinders	4,800
AFC upgrades to S/B equip, software & electronics	4,800
AFC (IBM) compressor replacement	696
Remote sensor elevator/escalator for extensions stations	540
Energy conservation	25,428
CONTROLS & COMMUNICATIONS	
AATC on CSX/DPX/PAX/SFO lines	32,400
Telephone switch replacement (19 locations)	4,800
Install new systems, yard, shop & tower data network	1,920
AVI readers at yards & other locations	4,800
FACILITY	
Resurface roads/parking and relamp shop/yard exterior lights	372
Replace yard disconnect enclosures	744
Overhead cranes – recondition (Hayward, Richmond, Concord, D.C.)	2,400
Paint and repair facility	2,400
Replace shop roll-up doors (Hayward, Richmond, Concord, Oakland)	1,500
Recondition shop/yard sump pumps	312
Replace Oakland Shop fuel facility	1,200
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
Pathfinder signs	600
Ashby access and station area improvements	0
Balboa Park access and station area improvements	0
Bayfair access and station area improvements	0
Oakland Coliseum access and station area improvements	0
Rockridge access and station area improvements	0
San Leandro access and station area improvements	0
Union City access and station area improvements	0
SEISMIC RETROFIT	
Seismic Retrofit Program Segment IV (Aerial Structures and Various Stations)	185,000
TOTAL TIER THREE	**280,956**
TIER FOUR	
ROLLING STOCK	
Install automatic train control restoration units (ARU)	3,000
MAINLINE	
STATIONS	
CONTROLS & COMMUNICATIONS	
Network hardware & software upgrades (replacements)	10,800
FACILITY	
Train operator training simulator	1,200
Lake Merritt Building renovation	8,400
Replace grease/oil facilities (Hayward, Richmond, Concord, D.C.)	192
Storage area canopy, lighting and office at Richmond Shop	216
WORK EQUIPMENT	
SERVICE IMPROVEMENTS	
Additional capacity enhancement program	1,200,000
SEISMIC RETROFIT	
Seismic Retrofit Program Segment V (Other BART Facilities)	130,000
TOTAL TIER FOUR	**1,353,808**
TOTAL TRACK TWO	**2,304,868**

* Note All Track Two figures are current estimates in 1999 dollars.

Chapter Five: Project Listings

FUNDING NEEDS

I. SYSTEMWIDE RENOVATION PROGRAM

I-A. Rolling Stock Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Replace A-& B-car door components	4,688	4,688	0									
c	Replace electrical couplers on C1-cars	2,068	2,068	0									
c	Replace batteries on A-, B-, and C1-cars	1,900	1,900	0									
c	Wheel upgrade program	2,026	2,026	0									
	A- & B- car renovation [1]	454,400	255,897	198,503	89,139	82,164	22,600	4,600					
	Subtotal Phase 1	***465,082***	***266,579***	***198,503***	***89,139***	***82,164***	***22,600***	***4,600***	***0***	***0***	***0***	***0***	***0***
	Phase 2												
	C-1 car mid-life overhaul (HVAC, carpets and seats)	10,000	10,000	0									
	C-1 car mid-life overhaul (doors, brakes, propulsion & liners)	4,984	0	4,984	4,984								
	Subtotal Phase 2	***14,984***	***10,000***	***4,984***	***4,984***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
	Total Track One	***480,066***	***276,579***	***203,487***	***94,123***	***82,164***	***22,600***	***4,600***	***0***	***0***	***0***	***0***	***0***

[1] *"Funding to date" includes all programmed federal, state, bridge toll, and BART funds as follows: $239,472,500 in Sec. 3, $20,000,000 in CMAQ, $1,973,500 in TCI, $15,000,000 in Prop. 108 bonds, $16,000,000 in bridge tolls, and $8,271,000 in BART funds.*

I-A. Rolling Stock Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 1			
Fleet upgrades	18,000	0	18,000
Security cameras installation in A & B cars	6,000	0	6,000
Subtotal Tier 1	***24,000***	***0***	***24,000***
Tier 2			
C1-car renovation	318,000	0	318,000
Subtotal Tier 2	***318,000***	***0***	***318,000***
Tier 4			
Install automatic train control restoration units (ARU)	3,000	0	3,000
Subtotal Tier 4	***3,000***	***0***	***3,000***
Total Track Two	***345,000***	***0***	***345,000***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Rolling Stock Renovation Program (Track One & Two)	**825,066**	**276,579**	**548,487**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-B. Mainline Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Track embankment upgrade	243	243	0									
c	BHT fire protection modifications	1,895	1,895	0									
c	TBT cathodic corrosion protection	3,328	3,328	0									
c	Replace dry with wet standpipes	8,927	8,927	0									
c	Recoat steel tunnel liner rings	586	586	0									
	R-O-W fencing	458	458	0									
	Caltrans reimbursable projects	3,097	3,097	0									
	Caltrans reimbursable (I-880 support)	350	350	0									
c	Repaint girders and bridges	2,012	2,012	0									
c	Replace sump pumps in subway tunnels	3,306	3,306	0									
	Replace rail	37,012	13,620	23,392	3,078	3,158	3,240	3,324	3,410	3,529	3,653		
	Traction power equipment renovation	27,655	10,000	17,655					5,684	5,883	6,088		
c	Rehab subway vent fans	1,337	1,337	0									
	Emergency mainline repairs	11,514	5,690	5,824	3,160	2,509			155				
	Traction power house roofs	420	420	0									
c	Asbestos abatement (Phases 1-4)	4,542	4,542	0									
	Subtotal Phase 1	***106,682***	***59,811***	***46,871***	***6,238***	***5,667***	***3,240***	***3,324***	***9,249***	***9,412***	***9,741***	***0***	***0***
	Phase 2												
	Replace rail	15,936	0	15,936								3,781	12,155
	Rehab traction power equipment	62,667	1,048	61,619	4,244	4,371	6,753	8,115	2,674	1,496	246	8,000	25,720
	TBT cathodic corrosion protection	6,000	0	6,000					6,000				
	Emergency standby power	1,700	0	1,700	1,700								
	Tunnel ventilation and TBT fan and main damper control imp.s	6,000	0	6,000					6,000				
	Caltrans reimbursable projects	949	0	949	949								
	Future repaint girders and bridges	1,200	0	1,200									1,200
	Lake Merritt Channel subway repair	2,400	0	2,400					2,400				
	Emergency mainline repairs	3,944	0	3,944					570	369	771	360	1,874
	Subtotal Phase 2	***100,796***	***1,048***	***99,748***	***6,893***	***4,371***	***6,753***	***8,115***	***17,644***	***1,865***	***1,017***	***12,141***	***40,949***
	Total Track One	***207,478***	***60,859***	***146,619***	***13,131***	***10,038***	***9,993***	***11,439***	***26,893***	***11,277***	***10,758***	***12,141***	***40,949***

I-B. Mainline Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 3			
Dry standpipes at I-680 and Springbrook crossings	444	0	444
Remove gaps in handrail and obstructions on emergency	2,400	0	2,400
Subtotal Tier 3	*2,844*	*0*	*2,844*
Total Track Two	*2,844*	*0*	*2,844*

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Mainline Renovation Program (Track One & Two)	**210,322**	**60,859**	**149,463**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-C. Stations Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Replace LMS concrete roof	215	215	0									
c	Replace security gates at some stations	34	34	0									
c	12th Street elevator replacement	900	900	0									
c	Replace station fire alarms	350	350	0									
c	Replace four Embarcadero escalators	2,777	2,777	0									
c	Replace floors on ten elevators	510	510	0									
c	ADA key station informational signage	470	470	0									
c	Stations security program	4,248	4,248	0									
c	Agent ticket reader	330	330	0									
c	Modify change machines	925	925	0									
c	Cubic faregate modifications	772	772	0									
c	Add faregates from storage at var. stations	1,062	1,062	0									
c	ADA AFC	1,500	1,500	0									
c	Bill-to-bill changer prototype	72	72	0									
c	Replace fire mains at three stations	250	250	0									
c	Replace and add bike lockers	597	597	0									
c	MacArthur Station emergency egress improvement	364	364	0									
	Escalator overhaul	28,027	28,027	0									
	Replace 19 station escalators	11,919	11,919	0									
	Ogawa Plaza project	251	251	0									
	Elevator overhaul	10,595	10,595	0									
	ADA key station informational signage	452	452	0									
	Remove architectural barriers	455	455	0									
	Replace bus transfer ticket machines	916	916	0									
	Energy conservation (Embarcadero Station)	1,713	1,713	0									
c	Credit-debit vendor	3,406	3,406	0									
	AFC modernization/Translink	77,776	42,241	35,535	13,210	7,040	5,435	5,780	4,071				
	Interim AFC upgrades	4,320	4,320	0									
c	Replace station signage	1,456	1,456	0									
	ADA key station parking modifications	1,350	1,350	0									
	Eight stations, general renovation	13,730	13,730	0									
	Four stations, general renovation	5,761	3,631	2,130	2,130								
c	Replace station roofing	851	851	0									
	Future general station renovation	34,800	0	34,800						4,000	4,000	11,000	15,800
	Repair platform subsurfaces	1,344	1,344	0									
	Replace platform edge tile	7	7	0									
	Subtotal Phase 1	***214,504***	***142,039***	***72,465***	***15,340***	***7,040***	***5,435***	***5,780***	***4,071***	***4,000***	***4,000***	***11,000***	***15,800***
	Phase 2												
	Access Upgrade: MacArthur Station elevator modifications	1,957	1,957	0									
	Access Upgrade: non-key station parking modifications	733	733	0									
	Access Upgrade: AFC swing gates and related	350	350	0									
	Access Upgrade: electronic elevator signs	400	400	0									
	Access Upgrade: misc. bathroom barrier removal	400	400	0									
	Access Upgrade: bathroom & elevator directional signs	200	200	0									
	Station painting and lighting	1,000	0	1,000	1,000								
	Automatic fare collection equipment expansion	36,000	0	36,000							3,250	7,875	24,875
	Replace station & yard P.A. and platform & security CCTV	5,100	0	5,100									5,100
	Stations security program	42,000	0	42,000						10,500	10,500		21,000
	Future station reroofing	6,750	0	6,750									6,750
	Replace station stair treads	3,600	0	3,600									3,600
	Station parking lot surface repair / replace	14,400	0	14,400							14,400		
	Replace Stewart-Warner signheads	6,000	0	6,000					6,000				
	Subtotal Phase 2	***118,889***	***4,040***	***114,849***	***1,000***	***0***	***0***	***0***	***6,000***	***10,500***	***28,150***	***7,875***	***61,324***
	Total Track One	***333,393***	***146,079***	***187,314***	***16,340***	***7,040***	***5,435***	***5,780***	***10,071***	***14,500***	***32,150***	***18,875***	***77,124***

I-C. Stations Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
Replace platform edge detectable warning sys. at 20 core stations	4,800	0	4,800
Renovate garage and other elevators, including LMA	3,600	0	3,600
Replace North Berkeley Station ceiling	1,284	0	1,284
General station renovation (passenger comfort improvements)	15,000	0	15,000
Subtotal Tier 2	***24,684***	***0***	***24,684***
Tier 3			
Station painting and relamping	3,400	0	3,400
Replace hydraulic lift cylinders	4,800	0	4,800
AFC upgrades to S/B equipment, software & electronics	4,800	0	4,800
AFC (IBM) compressor replacement	696	0	696
Remote sensor elevator/escalator for extension stations	540	0	540
Energy conservation	25,428	0	25,428
Subtotal Tier 3	***39,664***	***0***	***39,664***
Total Track Two	***64,348***	***0***	***64,348***

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Stations Renovation Program (Track One & Two)	**397,741**	**146,079**	**251,662**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-D. Controls & Communications Renovation (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Reverse running in TBT	180	180	0									
c	Emergency control center back-up	29	29	0									
c	Train ID enhancement	1,580	1,580	0									
c	Yard train control improvements	1,946	1,946	0									
c	Cash handling improvements	1,207	1,207	0									
c	Replace MVDDs	373	373	0									
	Train control rehab	48,790	9,802	38,988	5,130	5,263	5,400	5,540	5,684	5,883	6,088		
	Fiber optic/radio network (TRACS)	65,081	65,081	0									
	Advanced automatic train control	102,600	48,500	54,100	36,867	6,471	10,762						
	Automated Police dispatch	452	452	0									
	Comspec position in Central	350	350	0									
	Replace workstation consoles in Central	1,187	1,187	0									
c	Replace MetroVision destination signs	1,300	1,300	0									
	NXTGEN [1]	19,762	19,762	0									
	MIS mainframe computer	600	600	0									
c	Replace MARIS	1,615	1,615	0									
	DTS replacement (initial phase)	1,000	0	1,000	1,000								
	Yard cable plant replacement	550	0	550					550				
	Emergency controls & communications	6,781	270	6,511	1,000	716	1,005	1,005	500	500	500	500	785
	Subtotal Phase 1	***255,383***	***154,234***	***101,149***	***43,997***	***12,450***	***17,167***	***6,545***	***6,734***	***6,383***	***6,588***	***500***	***785***
	Phase 2												
	Augment police radio coverage	212	212	0									
	Train control rehab	30,350	0	30,350	1,235	201	228	256	286	266	246	6,556	21,075
	DTS replacement (second phase)	6,000	0	6,000						6,000			
	800MHz portable radios	1,200	0	1,200	1,200	0	0	0	0	0	0		
	Wayside wiring for interlocking replacement underground	6,000	0	6,000						6,000			
	AATC complementary tech., central computer, remainder of core	106,000	0	106,000			10,000	10,000	10,000			25,000	51,000
	Operations computer replacement	9,600	0	9,600					9,600				
	Richmond and Daly City yards console replacement	2,880	0	2,880						2,880			
	Replace yard voice recorders	600	0	600						600			
	Emergency controls & communications	48	0	48	0	0	0	0	0	0	0	0	48
	Subtotal Phase 2	***162,890***	***212***	***162,679***	***2,435***	***201***	***10,228***	***10,256***	***19,886***	***15,746***	***246***	***31,556***	***72,123***
	Total Track One	***418,274***	***154,446***	***263,828***	***46,432***	***12,651***	***27,395***	***16,801***	***26,620***	***22,129***	***6,834***	***32,056***	***72,909***

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[1] Does not include portions funded in extensions budgets.

I-D. Controls & Communications Renovation (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 3			
AATC on CSX/DPX/PAX/SFO lines	32,400	0	32,400
Telephone switch replacement (19 locations)	4,800	0	4,800
Install new systems, yard, shop and tower data network	1,920	0	1,920
AVI readers at yards and other locations	4,800	0	4,800
Subtotal Tier 3	***43,920***	***0***	***43,920***
Tier 4			
Network hardward and software upgrades (replacements)	10,800	0	10,800
Subtotal Tier 4	***10,800***	***0***	***10,800***
Total Track Two	***54,720***	***0***	***54,720***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Controls & Communications Renovation Program (Track One & Two)	**472,994**	**154,446**	**318,548**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-E. Facility Renovation and Replacement (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Replace Hayward Shop fire main	233	233	0									
c	Replace Hayward wheel press	544	544	0									
c	Replace shop parts washers	550	550	0									
c	Yard fuel tanks	35	35	0									
c	Richmond Yard efficiency improvements	353	353	0									
c	Emergency Richmond Shop roof repairs	73	73	0									
c	Wheel truing machines	3,519	3,519	0									
c	Wheel/rail maintenance study	123	123	0									
c	Central receiving & distribution facility study	10	10	0									
	Hayward Shop traction motor repair facility	3,186	3,186	0									
c	Replace dust collector systems at Rich. & Conc.	1,646	1,646	0									
	Richmond oil/water separator tanks	136	136	0									
	Richmond transit vehicle washer	3,862	1,538	2,324	2,324								
c	Richmond Shop & Yard security improvements	1,712	1,712	0									
	Transfer track crossings	360	360	0									
	Reconfigure Transportation Buildings	3,375	3,375	0									
	CHB security improvements	19	19	0									
c	Replace Met Center fuel tank	673	673	0									
	Hayward test track security	97	97	0									
	1,000 volt shop power supplies	70	70	0									
	Employee facility improvements	1,000	1,000	0									
	Repairables inventory (approx. $2M per yr.)	21,511	5,412	16,099	2,080	2,175	2,225	2,305	2,375	2,424	2,515		
	Replace shop roofing	3,000	0	3,000				1,000	1,000	1,000			
	Subtotal Phase 1	***46,086***	***24,663***	***21,423***	***4,404***	***2,175***	***2,225***	***3,305***	***3,375***	***3,424***	***2,515***	***0***	***0***
	Phase 2												
	Repairables inventory (approx. $2M per yr.)	10,860	0	10,860								2,590	8,270
	Hayward Tower renovation	21	21	0									
	Future replace shop roofing	2,400	0	2,400									2,400
	Subtotal Phase 2	***13,281***	***21***	***13,260***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***2,590***	***10,670***
	Total Track One	***59,367***	***24,684***	***34,683***	***4,404***	***2,175***	***2,225***	***3,305***	***3,375***	***3,424***	***2,515***	***2,590***	***10,670***

I-E. Facility Renovation and Replacement (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
Rehabilitation of TransBay Tube facility	1,200	0	1,200
Transit vehicle washer replacement at Concord & Hayward	8,400	0	8,400
Additional storage facilities	9,720	0	9,720
Subtotal Tier 2	***19,320***	0	***19,320***
Tier 3			
Resurface roads/parking and relamp shop/yar exterior lights	372	0	372
Replace yard disconnect enclosures	744	0	744
Overhead cranes -- recondition (Hayward, Richmond, Conc., D.C.)	2,400	0	2,400
Paint and repair facility	2,400	0	2,400
Replace shop roll-up doors (Hayward, Richmond, Concord, D.C.)	1,500	0	1,500
Recondition shop/yard sump pumps	312	0	312
Replace Oakland Shop fuel facility	1,200	0	1,200
Subtotal Tier 3	***8,928***	***0***	***8,928***
Tier 4			
Train operator training simulator	1,200	0	1,200
Lake Merritt Building renovation	8,400	0	8,400
Replace grease/oil facilities (Hayward, Richmond, Concord, D.C.)	192	0	192
Storage area canopy, lighting and office at Richmond Shop	216	0	216
Subtotal Tier 4	***10,008***	***0***	***10,008***
Total Track Two	***38,256***	***0***	***38,256***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Facility Renovation Program (Track One & Two)	**97,623**	**24,684**	**72,939**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

I-F. Work Equipment (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1 *(On-going projects 1995-2006)*												
Automotive-type vehicles ($1.2M per yr.)	15,228	4,028	11,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900		
M&E equipment (approx. $200K per yr.)	2,483	733	1,750	220	230	240	250	260	270	280		
Miscellaneous	143	143	0									
Non-ops depts. equipment ($100K per yr.)	1,230	250	980	110	120	130	140	150	160	170		
Non-revenue rail vehicles ($850K per yr.)	10,075	2,975	7,100	890	930	970	1,010	1,050	1,100	1,150		
Other Ops depts. equipment ($100K per yr.)	1,294	314	980	110	120	130	140	150	160	170		
PC equipment ($500K per yr.–300 machines)	6,138	2,078	4,060	520	540	560	580	600	620	640		
ADA Equipment	350	350	0									
Subtotal Phase 1	***36,941***	***10,871***	***26,070***	***3,150***	***3,340***	***3,530***	***3,720***	***3,910***	***4,110***	***4,310***	***0***	***0***
Phase 1 (New)												
Currency counter replacement	1,000	1,000	0									
Subtotal Phase 1 (New)	***1,000***	***1,000***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Phase 2 *(Includes on-going projects 2007-2009)*												
Automotive-type vehicles ($1.2M per yr.)	8,600	0	8,600								2,000	6,600
M&E equipment (approx. $200K per yr.)	1,220	0	1,220								290	930
Non-Ops depts. equipment ($100K per yr.)	780	0	780								180	600
Non-revenue rail vehicles ($850K per yr.)	5,100	0	5,100								1,200	3,900
Other Ops depts. equipment ($100K per yr.)	780	0	780								180	600
PC equipment ($500K per yr.–300 machines)	4,245	0	4,245	100	105	110	115	120	130	140	810	2,615
Additional spare parts	14,106	0	14,106		961				304	488	617	11,736
Subtotal Phase 2	***34,831***	***0***	***34,831***	***100***	***1,066***	***110***	***115***	***120***	***434***	***628***	***5,277***	***26,981***
Total Track One	***72,772***	***10,871***	***60,901***	***3,250***	***4,406***	***3,640***	***3,835***	***4,030***	***4,544***	***4,938***	***5,277***	***26,981***

I-F. Work Equipment (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Total Track Two	*0*	*0*	*0*

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Work Equipment Renovation Program (Track One & Two)	**72,772**	**10,871**	**60,901**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

II. EXTENSIONS (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1												
c to Colma (FFGA) [1]	170,179	170,179	0									
c to Dublin-Pleasanton [1]	543,050	543,050	0									
c to Pittsburg-Bay Point [1]	505,740	505,740	0									
to San Francisco International Airport (SFO) [2][3]	1,513,200	1,439,300	73,900	26,800		47,100						
to Warm Springs/Santa Clara Phase I [4]	185,800	19,700	166,100	4,000	4,000	4,500	7,900	11,500	19,900	19,500		94,800
Oakland Airport Connector [4]	4,000	4,000	0									
Pittsburg-Bay Point to Railroad Ave. [4]	60,000	60,000	0									
Subtotal Phase 1	*2,981,969*	*2,681,969*	*240,000*	*30,800*	*4,000*	*51,600*	*7,900*	*11,500*	*19,900*	*19,500*	*0*	*94,800*
Total Track One	*2,981,969*	*2,681,969*	*240,000*	*30,800*	*4,000*	*51,600*	*7,900*	*11,500*	*19,900*	*19,500*	*0*	*94,800*

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[1] *"Total Cost" shown is programmed funding. Actual final cost to be determined upon financial close-out of projects.*

[2] *FTA approved funding plan includes $750M total from FTA ($154M has been appropriated to date), $99M total from the Amendment to the BART-SamTrans Agreement ($76.5M has been appropriated to date), $165.5M total in state funds ($104M appropriated to date), $10M in MTC-allocated bridge toll revenue ($7.4M received to date), $87M from the San Francisco International Airport (SFIA) and $8.5M from the SFO CAPRA.*

[3] *Includes Capital Reserve Account for grant-ineligible expenses of SFO. Total CAPRA is $79.2M, $8.5M of which is included in SFO project cost. Also includes $12.5M for the power substation.*

[4] *Track One portion of project, for which potential funding sources can be identified. See additional increment in Track Two below.*

II. EXTENSIONS (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Priority 2			
Pittsburg-Bay Point to Railroad Ave. (6)	140,300	0	140,300
Warm Springs/Santa Clara Phase I extension additional grants	360,300	0	360,300
Oakland Airport Connector other grants	125,900	0	125,900
West Dublin/Pleasanton station	39,370	0	39,370
Subtotal Priority 2	***665,870***	***0***	***665,870***
Priority 3			
Phase 2 and 3 Extensions	TBD	0	TBD
to Antioch			
through West Contra Costa			
to Livermore			
within San Francisco			
through San Ramon Valley Corridor			
to Santa Clara County			
Commuter Rail (7)			
Subtotal Priority 3	***TBD***	***0***	***TBD***
Total Track Two	***665,870***	***0***	***665,870***

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

(6) *Cost in 1996 dollars. Will be updated when a funding plan and implementation schedule can be finalized.*

(7) *BART is studying possible commuter rail service in numerous corridors in the greater Bay Area, and the State has approved BART management of the Capitol Corridor service extending from San Jose to Sacramento. Service plans and costs will be evaluated in BART's Strategic Planning exercise currently underway, and in light of BART's Extension Staging Policy.*

Total Extensions Program (Track One & Two)	**3,647,839**	**2,681,969**	**905,870**

NOTES:

(1) *All figures in thousands of dollars (three decimal places dropped).*

(2) *Figures indicate project programming, reflecting project commitment requirements.*

(3) *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

III. SEISMIC RETROFIT PROGRAM (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 2												
Caltrans seismic engineering study	336	336	0									
Caltrans Local Seismic Retrofit Program	171,200	0	171,200	171,200								
Transbay Tube / W. Oakland seismic joint seismic retrofit	8,000	0	8,000	8,000								
Aerial structures seismic retrofit	16,700	0	16,700		8,600	8,100						
General obligation bond election	1,240	0	1,240	1,240								
		0										
Subtotal Phase 2	***197,476***	***336***	***197,140***	***180,440***	***8,600***	***8,100***	***0***	***0***	***0***	***0***	***0***	***0***
Total Track One	***197,476***	***336***	***197,140***	***180,440***	***8,600***	***8,100***	***0***	***0***	***0***	***0***	***0***	***0***

III. SEISMIC RETROFIT PROGRAM (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 1			
Segment I - Caltrans Local Seismic Retrofit Program (Bart Share)	13,800	0	13,800
Segment II - Lifeline Program	145,300	0	145,300
Segment III - Additional critical aerial structures and stations	125,000		125,000
Subtotal Tier 1	***284,100***	***0***	***284,100***
Tier 3			
Segment IV - Additional aerial structures and various stations	185,000	0	185,000
Subtotal Tier 3	***185,000***	***0***	***185,000***
Tier 4			
Segment V - Other BART facilities	130,000	0	130,000
Subtotal Tier 4	***130,000***	***0***	***130,000***
Total Track Two	***599,100***	***0***	***599,100***

* *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Seismic Retrofit Program (Track One & Two)	**796,576**	**336**	**796,240**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

IV. SERVICE IMPROVEMENTS (Track One)

		Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
					2000	2001	2002	2003	2004	2005	2006	2007	2008-10
	Phase 1												
c	Bayfair transit center	1,000	1,000	0									
c	Hayward transit center operational facility	1,282	1,282	0									
c	Walnut Creek transit center	2,930	2,930	0									
c	Concord transit center	1,649	1,649	0									
c	Pittsburg park/ride	1,656	1,656	0									
c	Daly City transit center	6,433	6,433	0									
c	Anti-graffiti program	580	580	0									
	System Capacity Study	784	784	0									
	Fruitvale transit center	2,645	2,645	0									
	Coliseum transit center	732	732	0									
	Hayward transit center canopies	1,248	1,248	0									
	South Hayward transit center	1,123	1,123	0									
	Union City transit center	2,313	2,313	0									
	Fremont transit center	2,897	2,897	0									
	Pl. Hill park/ride for I-680/24 mitigation	879	879	0									
	Concord shop expansion	21,713	7,592	14,121	14,121								
	Hayward yard improvements	1,333	500	833	833								
	El Cerrito Plaza transit center	420	420	0									
	Richmond transit center	1,678	1,678	0									
	West Oakland transit center	217	217	0									
	System access planning & monitoring	1,040	1,040	0									
	Pathfinder sign program prototype	230	230	0									
	Bicycle access improvements	704	704	0									
	Station area development planning (Joint Development.)	1,823	1,823	0									
	Long range planning	4,388	4,388	0									
	El Cerrito Plaza access and sta. area improvement.	5,500	0	5,500		5,500							
	Subtotal Phase 1	***67,197***	***46,743***	***20,454***	***14,954***	***5,500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
	Phase 2												
	Additional new bike lockers	500	500	0									
	Fruitvale transit village	3,080	3,080	0									
	Hayward yard improvements	3,262	0	3,262	3,262								
	Hayward shop lifts	10,497	0	10,497			4,617				5,880		
	Hayward component repair	6,206	0	6,206	6,206								
	Richmond shop lifts	4,416	0	4,416				4,416					
	Daly City transit vehicle washer	5,200	0	5,200		5,200							
	Automatic fare collection equipment renovation & expansion stud	500	0	500	500								
	Service improvements study	300	0	300	300								
	Bay Point parking expansion	4,200	4,200	0									
	Dublin Pleasanton parking expansion	4,600	4,600	0									
	Mission Street Corridor Revitalization Project (16th Street Mission)	130	0	130	130								
	BART-SFO Extension bicycle trail & San Mateo Co. improvements	2,000	0	2,000	2,000								
	Unassigned capital need	1,800	1,800	0									
	Subtotal Phase 2	***46,691***	***14,180***	***32,511***	***12,398***	***5,200***	***4,617***	***4,416***	***0***	***0***	***5,880***	***0***	***0***
	Total Track One	***113,888***	***60,923***	***52,965***	***27,352***	***10,700***	***4,617***	***4,416***	***0***	***0***	***5,880***	***0***	***0***

IV. SERVICE IMPROVEMENTS (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
24th Street / Mission access and station area improvments	TBD	0	TBD
Lafayette access and station area improvements	TBD	0	TBD
West Oakland access and station area improvments	TBD	0	TBD
Subtotal Tier 2	***TBD***	***0***	***TBD***
Tier 3			
Pathfinder signs further implementation	600	0	600
Ashby access and station area improvements	TBD	0	TBD
Balboa Park access and station area improvements	TBD	0	TBD
Bay Fair access and station area improvements	TBD	0	TBD
Oakland Coliseum access and station area improvements	TBD	0	TBD
Rockridge access and station area improvements	TBD	0	TBD
San Leandro access and station area improvements	TBD	0	TBD
Union City access and station area improvements	TBD	0	TBD
Subtotal Tier 3	***600***	***0***	***600***
Tier 4			
Additional Capacity Enhancement Program (1)	1,200,000	0	1,200,000
Subtotal Tier 4	***1,200,000***	***0***	***1,200,000***
Total Track Two	***1,200,600***	***0***	***1,200,600***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

(1) *Includes additional revenue vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; additional crossovers and storage tracks; and further expansion of maintenance shop and storage yard facilities.*

Total Service Improvements Program (Track One & Two)	**1,314,488**	**60,923**	**1,253,565**

NOTES:

(1) *All figures in thousands of dollars (three decimal places dropped).*

(2) *Figures indicate project programming, reflecting project commitment requirements.*

(3) *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

V. RESEARCH, DEVELOPMENT AND DEMONSTRATION (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1												
"CarLink" station cars demonstration	1,440	1,440	0									0
Electric vehicle charging kiosk demonstration	1,100	1,100	0									0
Superconducting Magnetic Energy Storage	468	468	0									0
Adoptive diagnostic systems	123	123	0									0
Sound mitigation/noise reduction program	350	350	0									0
R&D program	762	762	0									0
Subtotal Phase 1	***4,243***	***4,243***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Phase 2												
R&D program	500	0	500	500								
Subtotal Phase 2	***500***	***0***	***500***	***500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Total Track One	***4,743***	***4,243***	***500***	***500***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***

V. RESEARCH, DEVELOPMENT AND DEMONSTRATION (Track Two)

	Total Cost	Funding to 6/30/99	Funding Requirement
Tier 2			
Sound mitigation/noise reduction program (additional)	TBD	0	TBD
Adaptive diagnostic systems (additional)	TBD	0	TBD
Superconducting Magnetic Energy Storage (additional)	TBD	0	TBD
Traction power optimization	TBD	0	TBD
Other research and development	TBD	0	TBD
Subtotal Tier 2	***TBD***	***0***	***TBD***
Total Track Two	***TBD***	***0***	***TBD***

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Research, Development and Demonstration Program (Track One & Two)	**4,743**	**4,243**	**TBD**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

VI. OTHER FINANCIAL OBLIGATIONS (Track One)

	Total Cost	Funding to 6/30/99	Funding Requirement	Fiscal Year Commitment								
				2000	2001	2002	2003	2004	2005	2006	2007	2008-10
Phase 1												
C-2 car bonds, Daly City surcharge reserve, Met Center capital reserve, project development, NPS headcount	100,041	99,481	560	80	80	80	80	80	80	80		0
Subtotal Phase 1	***100,041***	***99,481***	***560***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***0***	***0***
Phase 2												
Met Center capital reserve	320	0 0	320								80	240
Subtotal Phase 2	***320***	***0***	***320***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***80***	***240***
Total Track One	***100,361***	***99,481***	***880***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***80***	***240***

VI. OTHER FINANCIAL OBLIGATIONS (Track Two)	Total Cost	Funding to 6/30/99	Funding Requirement
Total Track Two	*0*	*0*	*0*

- *All Track Two project cost estimates are conceptual, for planning purposes only.*

Total Other Financial Obligations Program (Track One & Two)	**100,361**	**99,481**	**880**

NOTES:

[1] *All figures in thousands of dollars (three decimal places dropped).*

[2] *Figures indicate project programming, reflecting project commitment requirements.*

[3] *All figures calculated on a base of project cost in calendar year 1999 dollars, escalated at three percent per year.*

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June 1, 2000

FOR IMMEDIATE RELEASE

BART RELEASES DRAFT FY01 TEN-YEAR PLANS

Oakland, CA.... The BART Board has released the District's draft Fiscal Year 2001 Short Range Transit Plan (SRTP) and Capital Improvement Program (CIP) for public review and will hear public comment on those documents at its regular July 13 meeting. That meeting will begin at 9:00 a.m. in the BART Board of Directors room at the District's Oakland headquarters, 800 Madison Street (above the Lake Merritt BART Station).

Required by the Federal Transit Administration and the Metropolitan Transportation Commission, the plans provide an analysis of BART's operating and capital funding needs, priorities, and funding strategies through Fiscal Year (FY) 2010.

The SRTP is a management and financial planning tool providing a long-term perspective of the current year operating program. The SRTP gives an overview of BART's organization, facilities, and fare structure. The document provides information on current rail ridership, service, and operating performance, as well as forecast ridership and future service plans, including the four-station BART-SFO Extension to Millbrae and the San Francisco International Airport. The SRTP demonstrates BART's financial capacity to provide planned service for future ridership growth and fund a substantial portion of the District's capital program.

The CIP is a management and financial planning tool for BART's capital program and lays out the District's approach to capital investment decision-making and capital funding strategy. The themes encompassed by the CIP include continued focus on the vital renovation and replacement of existing physical infrastructure, which is necessary to maintain current levels of service to existing BART passengers; investments in capacity enhancements to address dramatically growing ridership; and partnership with communities to realize facilitate access, improve the passenger experience and promote core values, such as prudent land use. Key projects featured in the CIP include the BART-SFO Extension, which extends the BART system to San Francisco International Airport and Millbrae, the A & B Car Comprehensive Renovation, which completely rehabilitates two-thirds of the District's rail vehicle fleet, and the Automatic Fare Collection Equipment Modernization / Translink Implementation project, which replaces and refurbishes ticket vending machines and faregates throughout the system and prepares the system to accept smart card technology.

Beginning Monday, June 5, 2000, the District's draft FY01 Short Range Transit Plan and Capital Improvement Program may be downloaded from BART's website at www.bart.gov/inside/planning/index. Accessible versions are also available on the website. Request for hard copies can be made on the website, or the documents may be picked up at the BART Public Affairs Office, 800 Madison Street, First Floor, Oakland. The following public libraries have copies available for review.

UC Berkeley Institute of
Transportation Studies Library
412 McLaughlin Hall
Berkeley, CA 94720

Castro Valley Public Library
20055 Redwood Road
Castro Valley, CA 94546

Contra Costa County Library Documents
Unit
1750 Oak Park Blvd.
Pleasant Hill, CA 94523-4497

Dublin Public Library
7606 Amador Valley Blvd.
Dublin, CA 94568

Fremont Public Library
39770 Paseo Padre Parkway
Fremont, CA 94538

Hayward Public Library
835 C Street
Hayward, CA 94541

Metropolitan Transportation Commission
Library
101 8th Street
Oakland, CA 94607

Oakland Public Library
125 14th Street
Oakland, CA 94612

Pittsburg Public Library
80 Power Avenue
Pittsburg, CA 94565

S. F. Municipal Railway
Planning Division Library
949 Presidio Avenue, Room 204
San Francisco, CA 94115

Pleasanton Public Library
4333 Black Avenue
Pleasanton, CA 94566

Berkeley Public Library
Reference Division
Shattuck Avenue and Kittredge
Berkeley, CA 94704

Richmond Public Library
325 Civic Center Plaza
Richmond, CA 94804

San Francisco Public Library,
Gov't Information Center
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Written comments may also be submitted by July 13, 2000 to the following address:

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FISCAL YEAR 2001 CAPITAL IMPROVEMENT PROGRAM

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FISCAL YEAR 2001
CAPITAL IMPROVEMENT PROGRAM
Fiscal Years 2001 through 2010

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The contents of this report reflect the views of BART, which is responsible for the facts, and accuracy of the data presented herein. The contents do not necessarily reflect the original views or policy of the USDOT. This report does not constitute a standard, specification or regulation, and does not preclude future labor contract negotiations or future BART Board deliberations regarding fares.

All projects discussed are subject to state and federal environmental review as required by law. Specific projects and project funding are subject to approval by the BART Board of Directors. Projects that do not yet satisfy these requirements are proposed projects. This report was researched and prepared by:

Priya Mathur

With noteworthy assistance from:

Department of Capital Development and Control

Staff throughout the District also provided significant assistance in the form of project information and strategy development.

San Francisco Bay Area Rapid Transit District

May 23, 2000

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Foreword

A NOTE FROM THE GENERAL MANAGER

Friends of BART,

The first year of the millennium has been an exciting one for the Bay Area Rapid Transit District. BART has seen ridership repeatedly set new records, exceeding 345,000 trips on PacBell Park opening day. Average weekday ridership rose to almost 328,000 in March – an increase of almost 14% over the prior year. We recognize that this is the result of many factors – from worsening Bay Area congestion to the superlative service that our employees provide our passengers.

While this ridership growth brings with it additional fare revenues, it also creates operational and infrastructural challenges. BART is rising to the occasion. BART is working hard to continue to provide exceptional service as more passengers traverse the system. Moreover, we are developing a comprehensive approach to addressing future capacity constraints on the system. We want to have a plan in place and implementation underway *before* the system hits full capacity.

This *Capital Improvement Program* and the *Short Range Transit Plan*, which is the operating counterpart to the *CIP*, outline BART's ideas about how we can best continue to serve our existing passengers, while continuing to play a vital role in addressing the Bay Area's mushrooming transportation needs. Chapter One provides an executive summary of the themes encompassed by the *CIP*. Please take the time to read it, as well as Chapters Two through Four, which detail BART's planned capital projects, funding strategy and project budgets. We look forward to receiving your thoughtful feedback. Comments can be sent to srtpcip@bart.gov.

Thomas E. Margro

General Manager

Chapter One: Executive Summary

OVERVIEW OF THE CAPITAL IMPROVEMENT PROGRAM

BART'S ROLE IN THE BAY AREA

With the booming economy the San Francisco Bay Area is experiencing, public transportation has never been more relevant. Record low unemployment and tight housing markets have exacerbated the jobs and housing imbalance, resulting in longer commutes and ever growing congestion. Transportation consistently ranks as a top priority in Bay Area public opinion polls, and the newspapers and airwaves are filled with reports of growing congestion.

BART is a 95-mile, 39-station rapid rail transit system serving four counties: Alameda, Contra Costa, San Francisco and San Mateo. Since opening in 1972, BART has carried over 1.5 billion people more than 19.5 billion passenger miles. For nearly thirty years, BART has played a key role in the Bay Area's transportation network, never more so than today.

A recent study by a real estate economic analysis firm documented the significant contributions to the region's economy that have resulted from the original BART system. The key to BART's future, and in no small measure to the continuing economic growth and "livability" of the Bay Area, is maximizing the productivity of the original BART investment, through reinvestment for renovation, earthquake retrofit, capacity expansion, and strategic expansion into new geographic and demographic markets.

BART's mission is to provide safe, clean, reliable and customer-friendly regional public transit in order to increase mobility and accessibility, strengthen community and economic prosperity, and preserve the environment in the Bay Area. Implementing the District's capital priorities will enable BART to continue to fulfill this mission to serve more customers, provide alternatives to growing congestion and help ensure the continuation of our very robust economy.

Ridership Growth: BART's Role in Traffic Congestion Relief

According to Caltrans, congestion on all Bay Area freeways increased more than 25% in just the last couple of years. Two of the three counties which lead the region in population and job growth are in the BART District -- that is, Alameda and Contra Costa. Santa Clara County, the other of the top three growth counties in the region, adjoins the southern boundary of the BART District. Addressing this growing congestion is key to sustaining the economic growth the region is enjoying.

Against this backdrop of growth and congestion, more people are riding BART than ever before. Ridership figures reflect BART's increasingly prominent role in keeping the Bay region moving. Ridership is at an all-time high, having risen 50% over the last decade. Average, not peak, weekday ridership in March 2000, was 327,900 – a full fourteen percent higher than the same period only one year ago.

And the numbers keep going up. Recently, ridership hit a record-breaking 345,000 passenger trips in a single day. This is very near the peak ridership BART carried while the San Francisco-Oakland Bay Bridge was closed following the Loma Prieta earthquake. Today's ridership levels are so high that they have already surpassed our planning projections for Fiscal Year 2004 – four years ahead of schedule.

Effect on the San Francisco-Oakland Transbay Corridor

To put this ridership in perspective, the BART system carries about 45% of the peak period, peak direction transbay commute. Without BART, the number of cars on the Bay Bridge during the morning commute would double from 30,000 to 60,000. In other words, the bridge would need an additional deck to accommodate the extra traffic.

Effects throughout the Region

But extraordinary ridership growth is not simply a transbay phenomenon. Record growth is occurring on every segment of the system, in both the commute and non-commute directions, in peak and off-peak periods, on weekdays and weekends.

FRAMEWORK FOR BART CAPITAL DECISION-MAKING

Last year, BART committed itself to a new framework for decision-making. The **Strategic Plan**, adopted by the Board of Directors in January 1999, provides the context for decisions regarding the District's operating and capital priorities and investments. The Strategic Plan is composed of seven areas of concern, some of which build on the fundamental principles that have always guided BART's decision-making, such as commitment to customer service and to BART employees, dedication to fiscal prudence, and optimization of transit travel demand. Other areas of concern reconfirm objectives that have surfaced in recent years, such as on-going reinvestment in the existing BART system. Land use, station area development and other community-oriented activities have also been elevated in their importance in recent years.

Recent tremendous growth in BART's ridership provides a sharp new focus for BART's capital decision making. As a result of this startling growth, it has become ever clearer that, to maintain and sustain existing levels of service, it is critical that BART invest not only in system renovation, but also in capacity enhancements throughout the system. Accordingly, BART has embarked on three coordinated thirty year capital planning studies. The purpose of these studies, planned for completion in Fiscal Year 2001, is to develop a comprehensive, long term approach to addressing BART's ever more complex capital issues.

The **System Reinvestment Study**, the first of the three thirty year studies, will culminate in a plan for life cycle based renovation and replacement of BART's existing capital plant. The key question that this study addresses is: what resources will be necessary to simply maintain and operate the existing BART system safely and reliably far into the future?

The **System Capacity Study** is the second of the three thirty year studies. This study looks at the bottlenecks in the system that limit capacity, and will identify targeted investments for optimal capacity benefit. The goal of this study is to determine which investments will be necessary to accommodate continuing ridership growth, while maintaining reliable operations and improving the system's ability to quickly recover from service disruptions. In conjunction with this new study, a related study of the capacity of BART's automatic fare collection system is already nearing completion.

The third of the three thirty year studies, the **System Expansion Study**, explores the potential for expansion of the BART system through infill stations and system extensions, and examines the potential impacts of expansion on the existing system.

Three other studies with much shorter time frame perspectives are simultaneously underway. These will inform the thirty year studies, and provide technical direction to near-term investment decisions.

The **Seismic Vulnerability Study** comprehensively evaluates the earthquake vulnerability of the BART system. Analysis of the BART's aerial, at-grade and subway structures, buildings and facilities will result in a more refined Seismic Retrofit Program.

The **Business Systems Study** reviews the District's business practices and the sufficiency of BART's existing information technology business systems. The study will culminate in a recommendation for modifications to or upgrade of existing business systems throughout the District.

The **Computer Network Study** assesses the adequacy of the existing administrative and transit operations networks for the "heavy-lifting" required in an ever more technical and computer-based environment. Moreover the study will look at the benefits and risks of merging the two networks.

BART Financial Performance

Relative to most transit agencies, BART is a strong performer financially. BART has reached a 65% farebox recovery ratio – 65% of its operating costs are funded with farebox and other BART generated revenues – one of the highest operating ratios in the nation. Growth in cost per passenger mile has been held below the rate of inflation for the past ten years. Three major investment houses have given BART a double-A bond rating, which is among the highest in the transit industry and demonstrates the markets' confidence in the BART system. Strategic, targeted capital investments in renovation and capacity expansion will support the District's long term financial health.

BART Customer Experience

Customer on-time performance is 95.5%, and customer satisfaction surveys consistently give BART high marks. A 1998 survey found that 74% of customers are satisfied with BART services. Although BART aims to develop its capital priorities from a customer perspective, construction and renovation by nature are disruptive to customer service. Capital projects inherently bring long-term benefits, while disruptions are often short-term. Increasingly, BART is working to actively mitigate the impacts of its capital projects by minimizing the time equipment is out of service, and by providing good alternatives to riders. BART is also working hard to better communicate project status to riders. Project managers increasingly plan, budget, and implement these mitigations, and ensure that they receive the emphasis they warrant.

STRUCTURE OF THE PROGRAM

The *Capital Improvement Program* comprises 265 individual projects. For organizational clarity, these projects are assembled into five major program areas:

- System Reinvestment
- Seismic Retrofit
- Service and Capacity Enhancement
- System Expansion
- Studies, Research and Development

The two program areas with the largest numbers of projects, System Reinvestment and Service and Capacity Enhancement, are further subdivided into subprograms based on types of capital assets. Further explanations of programs and subprograms follow:

Programs

System Reinvestment

Despite the intensified focus on capacity issues, the District is not losing sight of the vital renovation and replacement of existing physical infrastructure, which is necessary to maintain current levels of service to existing BART passengers. The *System Reinvestment Program* contains what is by far the longest list of projects of any of the capital program areas. System reinvestment is necessary to maintain BART's performance standards and to sustain customer service. As an almost thirty year old transit system, BART must periodically renovate and replace its original capital infrastructure if it is to preserve its level of service.

In 1995, BART committed to a $1.1 billion comprehensive Systemwide Renovation Program. This program, which includes the complete renovation of 439 railcars, the rehabilitation and replacement of elevators and escalators throughout the system and the restoration of many stations, is well underway. The results of this Program are directly noticeable by BART riders. The renovated rail cars are cleaner, brighter and more comfortable. Those elevators and escalators that have been completed are more reliable. The station restoration resulted in nicer looking stations with better lighting and, in some cases, new landscaping.

Since 1995, BART's renovation needs have grown. The District has embarked on a midlife overhaul of its C1 cars to improve the systems and passenger comfort of these vehicles. Other capital investment needs include additional ongoing renovation of BART's running rail and traction power system and increased investment in BART stations.

Seismic Retrofit

Earthquakes are a fact of life in the Bay Area, and earthquake safety is a top BART priority. Last year, BART developed a comprehensive seismic retrofit program designed not only to maintain the structural integrity of the system during and following a major earthquake, but also to enable the District to continue to operate with minimal delay after such an event.

In Fiscal Year 2000, BART embarked on a systemwide seismic study, which will assess the vulnerability of all components of the system in an earthquake. Since last year, BART and Caltrans have jointly been studying and reviewing the retrofit of BART's structures that span highways, streets and roads. The resulting Caltrans Local Seismic Retrofit Program will retrofit 25% of BART's aerial structures so they meet BART's serviceability standards. The remainder of the Core System Retrofit Program, which is planned to preserve transbay service and to retrofit vital aerial structures and stations, remains unfunded. Other segments of the program will retrofit the remainder of the system and BART facilities, when funding is secured.

Service and Capacity Enhancement

A strong commitment to on-time performance and customer service constantly motivates BART to pursue improvements, modifications and augmentations to the existing system. For this reason, the *CIP* has for many years included a *Service Improvement Program* of projects to upgrade the passenger experience. The number of passengers riding BART is one of the major factors influencing rider satisfaction with the system. As ridership grows, core system capacity constraints might be addressed in order to accommodate continued ridership growth and to ensure a high level of customer satisfaction into the future. Recognizing this critical link between customer satisfaction and system capacity, this year's *CIP* has broadened the *Service Improvement Program* to include an expanded set of projects in a *Service and Capacity Enhancement Program*. The projects in this section are aimed at maximizing the capacity of the core BART system to provide a high level of customer service to existing and new BART riders well into the future.

System Expansion

System Expansion represents the fourth major component of the District's program of capital priorities. While BART is first committed to preserving the existing system, the District is also dedicated to making strategic investments in additional needed service to the Bay Area.

A substantial portion of Phase 1 of the BART Extension Staging Program is nearing completion, with the BART Extension to San Francisco International Airport under construction and targeted for completion in late December 2001. Phase 1 also envisions completion of the BART Extension to San Jose – Phase I (Warm Springs) in southern Alameda County and the Oakland Airport Connector project. If passed, Measure B, Alameda County's transportation sales tax reauthorization measure, will directly fund these two extensions.

Beyond these projects, however, there continues to be strong interest throughout the region in exploring additional potential future extensions. Three expansion planning studies have been proposed for state funding, which would cover three key corridors in the region. These strategic opportunities assessments would focus on eastern Contra Costa County, the Tri-Valley area of eastern Alameda County and the I-80 corridor. A separate effort is already underway as the BART to San Jose Feasibility Study.

In addition to possibilities for extending BART tracks to new markets, the potential for infill stations on the existing system and possible interim service expansion are also being explored. Such opportunities are currently being identified, and will be analyzed as part of both the System Capacity and System Expansion Studies currently underway.

In November 1999, the Board of Directors adopted a new expansion policy framework that incorporates key values such as land use and community involvement. The System Expansion Study will integrate land use and community interests with technical, economic and financial factors to guide development of a refreshed vision of BART's role in reaching out to new markets.

Studies, Research and Development

The scope of this program, originally titled *Research, Development and Demonstration*, has been expanded this year to include the studies and planning efforts that inform many of the capital investment decisions made by BART. As noted above, these studies include the *System Reinvestment, System Capacity* and *System Expansion Studies* now underway, as well as strategic opportunities assessments and other studies.

The District, as a technology-reliant agency, must have a strong research and development (R&D) effort in order to optimize the performance and service of the BART system. BART's R&D group has designed advanced and highly useful technology that cost-efficiently improves the BART system. One prominent example of technology developed by BART's R&D group is the Advanced Automatic Train Control (AATC) system. This system, now being implemented, will enable trains to operate at closer headways, optimizing the capacity of the BART system. While AATC has been incorporated in the District's train control renovation program, other leading edge technological investigations are currently underway.

Subprograms

Two of the major program areas with the most projects – *System Reinvestment* and *Service and Capacity Enhancement* – are themselves divided into six subprograms, as follows:

Rolling Stock

This Subprogram includes investment in rail vehicles and related equipment necessary for revenue service.

Mainline

This Subprogram includes investment in track, power and related equipment necessary for revenue service.

Stations

This Subprogram includes investment in stations and areas around stations.

Controls & Communications

This Subprogram includes investment in train control, information technology, communications infrastructure and related equipment.

Facilities

This Subprogram includes investment in maintenance facilities, yards, buildings and related infrastructure.

Work Equipment

This Subprogram includes investment in capital equipment.

FUNDING STRATEGY

This *CIP* lists all of the projects that the District would implement over a ten year period, if adequate funding were available. The entire program totals $9.2 billion. A program of this size is currently beyond the level of funding that can reasonably be assumed to become available through existing sources over the next ten years. Therefore, in accordance with the approach taken by the Metropolitan Transportation Commission (MTC) in its development of the 20 year Regional Transportation Plan, BART's *CIP* is divided into two "tracks."

Track One, at a cost of $5.95 billion, is "financially constrained" per MTC's direction, and comprises those projects for which potential funding sources can reasonably be identified. The $3.26 billion balance of the program, Track Two, includes projects for which the projected near-term levels of identifiable funding sources are inadequate. Implementation of Track Two projects would require larger allocations to existing federal, state and local programs in the future and/or the creation of new funding sources. Thus, Track Two serves as the basis of advocacy and planning for increased levels of capital funding. When additional funding becomes available for such Track Two projects, projects will be selected on the basis of their tier and their funding eligibility.

This section references several funding sources, which are defined and discussed in greater detail in *Chapter Three.*

Track One Funding Strategies

System Reinvestment Program

Almost the entire amount for the District's $1.1 billion Original Renovation Program, as outlined in Fiscal Year 1995, has been programmed or allocated to BART for renovation capital projects. Since the adoption of the Original Renovation Program, potential funding opportunities have been identified for additional projects beyond the scope of the Original Renovation Program, in large part due to the passage of the Transportation Equity Act for the 21st Century (TEA-21) by Congress and to BART's projections of outyear federal grant funding. Now listed in Track One, most of these projects were listed in Track Two before such potential funding opportunities were identified. The opportunity to advance these projects is driven by additional available grant funding in the region, and the different funding criteria utilized for each grant program to award such funding to projects.

Much of the funding for the renovation program has been secured and a sound financial plan to bring the rest of the program to fruition has been developed. Developments in the financial plan since publication of the last *Capital Improvement Program* are significant.

Federal Programs

In the **Regional Rehabilitation Program**, in which MTC programs Surface Transportation Program and Congestion Mitigation and Air Quality Improvement (STP/CMAQ) funds, a total of $32.8 million was programmed this year for BART projects. Prior commitments to the A and B Car Comprehensive Renovation Program ($10 million) and the Automatic Fare Collection Equipment Modernization / Translink Implementation Project ($8.5 million) were met. In addition, funding was secured for the Replacement of Destination Signs Project ($6 million), the Renovation of Transbay Tube and Tunnel Ventilation Structures ($5.3 million), and a small contribution to the Caltrans Local Seismic Retrofit Program ($3 million).

The **Local Rehabilitation Program**, in which the County Congestion Management Agencies (CMAs) program STP/CMAQ funds, also funded a number of BART renovation projects, totaling $6.6 million. These projects include the Hayward Yard Train Washer Renovation and the West Oakland Lintels Renovation in Alameda County, the Berkeley Hills Tunnel Doors and the project to Replace Platform Edge Detectable Warning Treatment in Contra Costa County, and the Daly City Yard and Shop Improvements and the Fire Protection for Bicycle Lockers projects in San Mateo County.

BART Funds

This year BART issued a third series of sales tax revenue bonds in support of its *System Reinvestment Program*. This bond issue raised $90 million for the A and B Car Comprehensive Renovation Program, $13 million for Maintenance Facilities Upgrades and $6 million for other renovation projects.

Because Fiscal Year 2000 has been a successful one for the Operating Budget, BART has been able to advance some of its unfunded capital requirements this year. In January 2000, BART set aside $10.3 million towards the Caltrans Local Seismic Retrofit Program. Additional year end budget revision is expected to generate additional allocations for the capital program at the end of the fiscal year for the Caltrans Local Seismic Retrofit Program and other urgent capital needs.

MTC Resolution 2672

In May 1994, BART and MTC jointly adopted MTC Resolution 2672, a cooperative funding agreement designed to address BART's most critical renovation needs. The agreement calls for MTC to program $450 million in federal, state, and regional funds for BART renovation, and for BART to generate $200 million as local match to the proposed grant funds. MTC currently projects that it will complete the remainder of its Resolution 2672 commitment to BART by 2004.

The *CIP* adopted in January 1995 outlined the need for BART to issue bonds to match and supplement grants for the Original Renovation Program. That *CIP* proposed bond issues for the springs of 1995, 1997, 1998 and 1999. Three series of bonds were actually issued in 1995, 1998 and 1999, resulting in more than $390 million of bond proceeds, thereby enabling BART to more than meet its Resolution 2672 match commitment. About $161 million of those funds was used to buy down BART's Resolution 2672 match commitment. The final series of bonds, expected to be issued in 2000 in the amount of $39 million, will complete BART's commitment to the A and B Car Comprehensive Renovation Program, thereby concluding the District's commitment to Resolution 2672.

Reinvestment in the BART System beyond Resolution 2672

Since the adoption of Resolution 2672, BART and MTC have continued to jointly pursue additional grant funding for the balance of the renovation program above the $650 million outlined in Resolution 2672. As the financial program has evolved, grant sources will make up more than the $450 million identified in Resolution 2672. The majority of these additional funds will be programmed between Fiscal Year 2005 and Fiscal Year 2010 from both federal formula and flexible fund sources.

BART has also generated bond funds for capital projects beyond Resolution 2672. Of the $389 million of bond proceeds for renovation projects generated by the 1995, 1998 and 1999 bond issues and projected 2000 bond issue, $268 million will be used for projects beyond the Resolution 2672 commitment.

Challenges in Grant Funding

The remaining financial challenges include the need for BART and MTC to actually secure the remaining grants now programmed in support of Resolution 2672. BART will issue a fourth series of sales tax revenue bonds for $39 million to complete its commitment to the A and B Car Comprehensive Renovation Program. BART also plans to generate a total of $147.8 million in operating funds for direct allocation to the capital program during the period Fiscal Years 2001 through 2010, in addition to the $63.8 million already generated between Fiscal Year 1997 and Fiscal Year 2000.

Seismic Retrofit Program

BART has been working closely with Caltrans over the past year to develop an engineering and funding agreement to execute Caltrans' financial commitment to the Local Seismic Retrofit Program. In addition, BART committed $10.3 million in January to the Local Seismic Retrofit Program, $2 million of which will fund a systemwide seismic vulnerability study separately listed under *Studies, Research and Development*. The Metropolitan Transportation Commission (MTC) has also committed approximately $3 million to the project. Currently, the Local Seismic Retrofit Program is the only segment of the *Seismic Retrofit Program* for which funding can reasonably be assumed.

Service and Capacity Enhancement Program

BART has become increasingly engaged in station area development projects throughout the BART District. This means that BART is devoting ever greater amounts of resources to partnering with local communities, other transit agencies, potential developers and other transportation stakeholders to develop sound planning around BART stations. Moreover, BART is entering a growing number of Memorandums of Understanding (MOUs) that govern the funding plans, design plans and project implementation plans for these projects. Some notable station area development projects in which BART is engaged include the 16th Street Mission BART Station Southwest Plaza Community Design Plan Implementation, the Fruitvale Transit Village and the Concord BART Streetscape and Pedestrian Access Improvements Project. These all have complicated funding plans, utilizing funds from a variety of sources, including federal, state and local grants, contributions from local jurisdictions, BART contributions and other local funding.

Because of the potential for state budget surplus funds or State Transportation Improvement Program (STIP) augmentation funds this year, BART has put forward several proposals for funding of critical system capacity projects. $138 million was sought from the potential state budget surplus for future phases of AATC, including the development and implementation of complementary technology, central computer software development and implementation of AATC on the remainder of the core system. These funds were not included in the Governor's *Traffic Congestion Relief Plan* for use of the budget surplus. Thus, BART will pursue outyear federal Section 5307 and Section 5309FG funds. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these grants.

Other project proposals for the potential budget surplus included station area development throughout the District, including prudent investment in access improvements, and expansion of BART's automatic fare collection (AFC) system to meet growing capacity. This AFC Equipment Expansion project, estimated to cost $105 million, would procure and install additional faregates, ticket vending machines and addfare machines in those stations identified as approaching their fare collection capacity. This project also includes the architectural modifications deemed necessary to fit the new machines into the stations. For this project, BART plans to pursue outyear Surface Transportation Program and Congestion Mitigation and Air Quality Improvement (STP/CMAQ) and STIP funds.

System Expansion Program

With federal approval of an amendment to the Full Funding Grant Agreement, the BART-SFO Extension is fully funded.

BART has made significant steps towards the development of a full funding plan for the Oakland Airport Connector project. This year, BART submitted applications for regional and interregional State Transportation Improvement Program funding for the project, which the *CIP* assumes will be funded in the outyears. Given existing project development funding totaling $7 million (including $3 million of STIP funds recently programmed by the Alameda County CMA), the planned $65.8 million of Alameda County Measure B Transportation Sales Tax Reauthorization (Measure B) funds and the Port of Oakland's commitment of an additional $23.5 million, only $2.7 million of this project would remain unfunded.

$1.2 million for the environmental process and preliminary engineering for the West Dublin / Pleasanton Infill Station and Transit Village Project was funded by the Alameda County Congestion Agency with STIP funds. The remainder of the project, which has a cost still to be determined, is pending a final funding agreement with the Cities of Dublin and Pleasanton and the developer.

The BART Extension to San Jose – Phase I (Warm Springs) has a partial funding plan, which is listed in Track One. The Track One funding sources include Measure B funds of $165.5 million, SamTrans funds of $165.6 million, Transit Capital Improvement funds of $7.7 million, bridge tolls of $33.75 million and BART funds of $21.1 million. The remainder of the program is listed in Track Two for $207.65 million.

This *CIP* assumes that the Governor's *Traffic Congestion Relief Plan*, which allocates several billion dollars to transportation projects throughout the state, is approved by the state legislature this summer. As a result, the BART Extension to San Jose – Phase II (Santa Clara) project is listed as partially funded in Track One for $725 million.

The Governor's *Traffic Congestion Relief Plan* also funded three strategic opportunities assessments in the I-580 / Livermore, State Route 4 and Western Contra Costa County corridors, separately listed under *Studies, Research and Development.*

Studies, Research and Development Program

The District has funded the *System Capacity* and *System Expansion Studies*, among other studies and planning efforts, with BART capital funds. The *System Reinvestment Study*, and other studies and planning efforts, are funded with BART operating funds. In addition, as noted above, the Governor's *Traffic Congestion*

Relief Plan funded three strategic opportunities assessments in the I-580 / Livermore, State Route 4 and Western Contra Costa County corridors.

Track Two Funding Strategies

System Reinvestment Program

With the adoption of MTC Resolution 2672 and recent funding successes for renovation and replacement projects, BART has come a long way towards the comprehensive renovation of its system. However, system reinvestment needs totaling $534.8 million remain. BART will continue to advocate for additional federal Section 5307, Section 5309FG, STP and CMAQ grant funds for the renovation of the existing system. In addition, BART is participating in an American Public Transit Association (APTA) taskforce regarding the authorization of the next phase of Congress' Transportation Equity Act for the 21st Century (TEA-21). APTA and its constituent members will lobby for increased investment in public transit across the country.

Seismic Retrofit Program

The District is continuing to review and pursue funding options for the $610 million Track Two portion of the *Seismic Retrofit Program*. Potential funding options include federal and state grant funds, general obligation bonds, sales tax revenue bonds and other financing mechanisms. In reviewing alternatives that might generate sufficient funds to support the program, BART staff has also looked at state level general obligation bonds, gas tax subventions and an extension of the seismic surcharge on the Bay Bridge. These funding alternatives do not look very likely at this time, but BART will continue to seek funding opportunities.

Service and Capacity Enhancement Program

This year, potential funding opportunities have been raised by county sales tax revenue expenditure planning, a potential 2000 STIP augmentation, the projected state budget surplus and State Constitutional Amendment 3 (SCA 3), an amendment that would reduce the voter approval requirement for local transportation sales tax measures from a supermajority of two-thirds to a simple majority of greater than 50%. In response to these funding opportunities, BART has submitted many capacity enhancement projects to the counties, Caltrans and state legislators for funding consideration. These projects, amplified in urgency by BART's phenomenal recent surge in ridership, include AATC Phases IV-V, AFC Equipment Expansion and station area development projects, among others.

System Expansion Program

The District's expansion funding priority is the completion of the BART – SFO Extension. The *System Expansion Study* and three strategic opportunities assessments, for which the Governor proposed funding in his *Traffic Congestion Relief Plan*, will help to determine BART's investment in future expansion.

Studies, Research and Development Program

Only one project, the Platform Noise Reduction Study, is included in Track Two of the *Studies, Research and Development Program*. BART will pursue funding sources for this project in accordance with its approach to capital investment decision-making and as potential funding opportunities become available.

Chapter Two: The Program of Projects

DETAILS OF THE CAPITAL IMPROVEMENT PROGRAM

CAPITAL NEEDS AND SOURCES SUMMARY

This chapter provides brief descriptions of needs and potential funding sources for BART's 111 current and planned capital projects organized by program and subprogram.

The tables immediately below provide a roll-up summary by program for both Track One and Track Two. Detailed project listings for the Current and Planned Track One Program, the Completed Track One Program and the Track Two Program are included, along with these summary tables, in *Chapter Four*.

Total Track One Program Capital Needs

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
System Reinvestment Program													
Rolling Stock	485,958	380,339	105,619	72,803	22,600	4,600	0	0	0	0	0	0	5,616
Mainline	210,611	65,253	145,358	17,903	12,097	12,939	21,668	12,408	11,487	13,281	13,693	14,120	15,762
Stations	279,388	156,383	123,005	21,901	9,923	13,473	6,845	6,857	6,943	14,032	14,122	8,016	20,893
Controls & Communications	314,933	199,256	115,677	18,585	17,701	7,296	8,020	23,129	7,834	8,056	8,285	8,522	8,248
Facilities	28,843	21,383	7,460	1,340	80	1,080	1,080	1,080	80	80	80	80	2,480
Work Equipment	100,460	25,246	75,214	5,240	7,445	5,180	5,905	8,119	6,375	6,615	6,860	11,605	11,870
Total System Reinvestment Program	*1,420,194*	*847,860*	*572,334*	*137,772*	*69,846*	*44,568*	*43,518*	*51,593*	*32,719*	*42,064*	*43,041*	*42,344*	*64,869*
Seismic Retrofit Program	*222,566*	*9,540*	*213,026*	*211,328*	*1,698*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Service and Capacity Enhancement Program													
Rolling Stock	0	0	0	0	0	0	0	0	0	0	0	0	0
Mainline	0	0	0	0	0	0	0	0	0	0	0	0	0
Stations	155,094	59,518	95,577	11,530	103	106	109	10,613	13,866	12,994	7,998	13,627	24,630
Controls & Communications	116,787	1,187	115,600	0	10,000	10,000	19,600	0	0	25,000	25,000	26,000	0
Facilities	10,805	4,925	5,880	0	0	0	0	0	5,880	0	0	0	0
Total Service and Capacity Enhancement Program	*282,686*	*65,630*	*217,057*	*11,530*	*10,103*	*10,106*	*19,709*	*10,613*	*19,746*	*37,994*	*32,998*	*39,627*	*24,630*
System Expansion Program													
BART Extension to San Francisco International Airport	1,483,200	1,436,100	47,100	0	47,100	0	0	0	0	0	0	0	0
BART Extension to San Jose - Phase I (Warm Springs - in 1998 $)	393,702	55,350	338,352	0	33,100	33,200	33,100	33,100	60,852	36,250	36,250	36,250	36,250
Oakland Airport Connector (in 1998 dollars)	127,300	4,000	123,300	23,993	20,993	20,993	28,660	28,660	0	0	0	0	0
West Dublin / Pleasanton Infill Station and Transit Village (1)	1,200	1,200	0	0	0	0	0	0	0	0	0	0	0
BART Extension to San Jose - Phase II (Santa Clara)	725,100	0	725,100	100	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556
BART Extension to State Route 4 Corridor	30,000	0	30,000	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000
Colma Extension	180,000	180,000	0	0	0	0	0	0	0	0	0	0	0
Dublin/Pleasanton Extension	546,000	546,000	0	0	0	0	0	0	0	0	0	0	0
Pittsburg/Bay Point Extension	508,000	508,000	0	0	0	0	0	0	0	0	0	0	0
Total System Expansion Program	*3,994,502*	*2,730,650*	*1,263,852*	*24,093*	*181,749*	*134,749*	*142,316*	*147,316*	*146,408*	*121,806*	*121,806*	*121,806*	*121,806*
Studies, Research & Development Program	*33,320*	*15,097*	*18,223*	*18,035*	*63*	*63*	*63*	*0*	*0*	*0*	*0*	*0*	*0*
Total Track One Program Capital Needs	5,953,267	3,668,776	2,284,491	402,759	263,458	189,485	205,606	209,522	198,873	201,863	197,845	203,776	211,305

* Note: all figures in thousands of dollars.
Total Track One Program Capital Needs are identified as committed *as of the commitment date.*

(1) The remainder of the project is still under negotiation with BART's funding and development partners.

Total Track One Program Funding Sources	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Federal Funding Sources													
Federal Section 5309	1,292,178	1,141,560	150,618	0	0	0	11,487	15,503	9,771	26,400	26,624	27,656	33,177
Federal Section 5307	171,217	50,471	120,746	12,371	20,496	21,788	15,504	7,743	7,989	8,269	8,559	8,858	9,168
STP / CMAQ	162,184	57,153	105,032	20,462	3,354	0	7,680	11,600	11,600	12,300	12,300	11,840	13,896
Other Federal	4,141	4,141	0	0	0	0	0	0	0	0	0	0	0
TEA / TLC / TCSP	2,778	2,478	300	300	0	0	0	0	0	0	0	0	0
Subtotal Federal Funding Sources	*1,632,498*	*1,255,803*	*376,695*	*33,133*	*23,851*	*21,788*	*34,671*	*34,846*	*29,361*	*46,969*	*47,483*	*48,354*	*56,241*
			0										
State Funding Sources			0										
Proposition 108	15,000	15,000	0	0	0	0	0	0	0	0	0	0	0
Transit Capital Improvement Program	67,885	67,885	0	0	0	0	0	0	0	0	0	0	0
State Transportation Improvement Program	536,125	467,295	68,830	4,700	0	0	20,400	21,480	3,250	8,500	3,500	3,500	3,500
Other State	1,039,120	97,120	942,000	205,667	86,222	86,222	80,556	80,556	80,556	80,556	80,556	80,556	80,556
Subtotal State Funding Sources	*1,658,129*	*647,299*	*1,010,830*	*210,367*	*86,222*	*86,222*	*100,956*	*102,036*	*83,806*	*89,056*	*84,056*	*84,056*	*84,056*
			0										
Local Funding Sources			0										
Bridge Tolls	275,377	162,150	113,227	2,599	5,124	5,447	8,668	8,712	35,092	11,742	11,871	12,088	11,885
County Transportation Sales Tax	571,930	305,130	266,800	18,660	46,260	46,260	46,260	51,260	38,100	5,000	5,000	5,000	5,000
Other Local	754,610	584,316	170,294	8,581	7,936	7,939	109	113	116	36,369	36,373	36,377	36,380
Subtotal Local Funding Sources	*1,601,917*	*1,051,595*	*550,321*	*29,839*	*59,320*	*59,646*	*55,037*	*60,084*	*73,308*	*53,112*	*53,244*	*53,465*	*53,265*
			0										
BART Funding Sources			0										
1995 Bonds	96,559	93,345	3,214	3,214	0	0	0	0	0	0	0	0	0
1998 Bonds	179,613	176,036	3,577	2,466	1,111	0	0	0	0	0	0	0	0
1999 Bonds	108,945	103,760	5,185	5,185	0	0	0	0	0	0	0	0	0
2000 Bonds	39,000	0	39,000	39,000	0	0	0	0	0	0	0	0	0
SFO CAPRA Bonds	71,700	26,000	45,700	0	45,700	0	0	0	0	0	0	0	0
Interest Earnings	29,555	16,439	13,116	7,599	284	5,233	0	0	0	0	0	0	0
1995 Cross Border Lease	1,019	1,019	0	0	0	0	0	0	0	0	0	0	0
Previous Reserves	101,323	94,151	7,172	6,752	320	100	0	0	0	0	0	0	0
Allocations from Operating Budget	211,623	63,826	147,796	19,801	13,720	12,016	13,372	15,056	12,399	12,727	13,062	17,901	17,743
Other BART	129,693	129,693	0	0	0	0	0	0	0	0	0	0	0
Subtotal BART Funding Sources	*969,028*	*704,268*	*264,760*	*84,017*	*61,135*	*17,349*	*13,372*	*15,056*	*12,399*	*12,727*	*13,062*	*17,901*	*17,743*
			0										
Other Funding Sources			0										
Reimbursement	1,482	1,464	18	18	0	0	0	0	0	0	0	0	0
Private Sector Financing	11,000	11,000	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous Grants	79,213	79,213	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Funding Sources	*91,695*	*91,678*	*18*	*18*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Track One Program	5,953,267	3,750,643	2,202,625	357,373	230,528	185,006	204,035	212,022	198,873	201,863	197,844	203,776	211,305

* Note: all figures in thousands of dollars.
Total Track One Program Funding Sources are identified as committed *as of the date they are available for commitment.*

Track Two Program

	Remaining Requirement
System Reinvestment Program	534,830
Service and Capacity Enhancement Program	1,730,500
System Expansion Program	380,348
Seismic Retrofit Program	610,000
Studies, Research & Development Program	150
Total Track Two Program	**3,255,828**

* Note: all figures in thousands of dollars.

SYSTEM REINVESTMENT PROGRAM

The District continues to face pressure to preserve the BART system as its infrastructure ages. The A and B car renovation, which completely rehabilitates BART's 439 original transit vehicles, is already underway. This project will greatly improve the reliability, safety and comfort of 66% of the District's revenue rail vehicle fleet.

As part of the District's commitment to continuous reinvestment in critical components of the system, BART has three ongoing projects – rail replacement, traction power renovation and train control renovation – which are funded with a combination of federal grants, bridge tolls and BART funds. Renovation in these areas is critical to maintain BART's operating performance and safety standards.

The District also has many renovation projects underway in its stations, including the rehabilitation and replacement of elevators and escalators systemwide and the renovation and replacement of fare collection equipment systemwide. These reinvestment projects will facilitate BART passenger entrances to and exits from the system by improving escalator, elevator and faregate reliability.

Many other projects essential to reliable operations take place behind the scenes at BART's various maintenance facilities. Examples include rebuilding the train washers, reroofing shop buildings, and replacing obsolete capital equipment.

Original Renovation Program

By 1995, after more than 20 years of service with the original equipment, BART had developed an initial phase program of systemwide renovation, forecast to take up to ten years to complete, at an estimated cost of $1.1 billion. Also by 1995, the District had developed a realistic financial plan for the program anchored by substantial grant funding and supplemental, necessary fare increases to generate a major share of the required funding internally.

The good news for BART customers is that in 2000, only five years into the ten year program outlined in 1995, 58 of 94 renovation projects have already been successfully completed, representing over 60% of the Original Renovation Program. (It is important to note that, since the adoption of the Original Renovation Program, some of these projects have been reclassified in other programs.)

One of the first projects completed was the replacement of seat covers, upholstery, and carpet in 100 of BART's oldest rail cars. Sixteen stations have undergone a major program of intensive cleaning, painting, repairs to equipment and structures, and refurbished landscaping. Many other recent improvements are also readily noticeable to BART riders, such as the replacement of 23 escalators in downtown San Francisco stations, the addition of 30 faregates to improve passenger flow, significant station safety and security improvements, installation of BART ticket machines that accept credit and debit cards, the replacement of the old bus transfer ticket dispensers in the East Bay stations, and the replacement of old bicycle lockers. The following table outlines the projects included in the Original Renovation Program and indicates the progress that has been made on the program.

Original Renovation Program

		Total Commitments
	Rolling Stock	
	A and B Car Comprehensive Renovation	454,400
c	Replace A and B Car Door Components	4,688
c	Replace Batteries on A, B and C1 Cars	1,834
c	Replace Electrical Couplers on C1 Cars	2,068
c	Wheel Upgrade Program	1,714
	Mainline	
c	Asbestos Abatement	4,243
c	Berkeley Hills Tunnel Fire Protection Modifications	1,895
c	Caltrans Reimbursable Projects	4,396
	Lake Merritt Channel Subway Repair	2,400
c	Recoat Tunnel Liner Rings for Corrosion Protection	586
c	Rehabilitate Subway Ventilation Line Fans	1,337
c	Repaint Structural Girders and Bridges	2,012
	Replace Running Rail and Accessories	24,626
c	Replace Sump Pumps in Subway Tunnels	3,306
	Replace Traction Power House Roofs	344
	Right-of-Way Fencing	508
	Traction Power Equipment Renovation	23,000
	Transbay Tube and Tunnel Ventilation	6,000
	Transbay Tube Cathodic Corrosion Protection	9,478
	Stations	
c	Accessible Automatic Fare Collection Equipment	1,500
c	ADA Key Station Informational Signage	852
	ADA Key Station Parking Modifications	1,350
c	AFC Swing Gates Installation	350
c	Anti-Graffiti / Vandalism Program	580
	Automatic Fare Collection Equipment Modernization / Translink	82,776
c	Bathroom and Elevator Directional Signs	200
c	Bathroom Barrier Removal	425
c	Electronic Elevator Signs Installation	700
c	Fire Mains Replacement at Fremont / Oakland Line	250
	General Station Renovation	22,594
	Interim AFC Equipment Upgrades	4,320
c	Intermodal Access Program / Transit Centers	15,102
c	Key Station ADA 12th Street Elevator Replacement	859
	MacArthur Station Elevator Replacement	2,407
c	Modifications to Cubic Faregates	772
c	Non-Key Station Parking Modifications	733
c	Refurbish and Install In-Storage Faregate Units	1,065
c	Repair Concrete Roof of Lake Merritt Station	215
c	Repair Platform Sub-Surfaces at Various Stations	1,331
c	Repair Stair Tread Edges and Replace Anti-Slip Treatments	7
c	Replace Agent Ticket Readers	330
	Replace and Rehabilitate Escalators and Elevators	52,343
	Replace Bus Transfer Ticket Machines	922
	Replace Destination Signs	9,926
c	Replace Four Embarcadero Station Elevators	2,777
c	Replace Maps and Signs in Stations	1,390
	Replace Platform Edge Detectable Warning Treatment	2,847
c	Replace Station Fire Alarms	350
	Replace Station Public Address System	7,230
c	Replace Station Roofing	851
c	Replace Ten Elevator Floors	510
	Reroof Station Canopy Roofs	5,486
c	Security Gates Replacement at South Hayward and Other Stations	34
c	Stations Security Program	4,248

Original Renovation Program (continued)

		Total Commitments
	Controls & Communications	
	Advanced Automatic Train Control (AATC) Phases I-III	105,950
c	Comspec Position in Central	350
c	Emergency Control Center Back Up	29
	Fiber Optic / Radio Telecommunications Network (TRACS)	67,184
c	MIS Mainframe Computer	600
	NXTGen Program	19,762
c	Replace Maintenance Vehicle Detection Devices	373
c	Replace MARIS	1,615
c	Replace MetroVision Sign Units	1,300
	Replace Original DTS Data Communications System Equipment	7,000
	Replacement of Yard Voice Recorders	600
c	Reverse Running in Transbay Tube	180
	Richmond and Daly City Yard and Console Replacement	2,880
	Wayside Train Control Equipment Renovation	79,140
	Facilities	
c	Central Receiving and Distribution Facility	10
c	Concord and Richmond Yard Track Crossings	360
c	Fire Main Replacement at Hayward Yard	172
c	Hayward Tower Renovation	57
c	Metro Center Building Fuel Tank	675
c	Oil and Water Separators at Richmond and Hayward Shops	136
	Reconfigure and Renovate Transportation Buildings at Yards	3,395
	Renovation of Hayward Yard Train Washer Facility	4,200
	Renovation of Richmond Yard Train Washer Facility	3,862
c	Replace Dust Collector Systems at Richmond and Concord Shops	1,641
c	Replace Parts Washing Facilities in All Shops	550
	Reroofing at the Shops and Other District Facilities	5,400
c	Richmond Shop Roof Repairs	73
c	Richmond Yard Efficiency Improvements	353
c	Wheel Press at Hayward Shop	544
c	Wheel Truing Machines	3,519
c	Yard Fuel Tanks	35
	Work Equipment	
	Maintenance and Engineering Equipment	2,363
c	Computer and Network-related Equipment	3,283
	Non-Operations Departments Equipment	1,159
	Non-Revenue Vehicles	41,912
	Non-Stock Inventory (repairable parts provisioning)	29,641
	Other Operations Departments Equipment	1,109
	Spare Parts	19,500
	Studies, Research & Development Program	
c	Wheel / Rail Maintenance Study	123
	Total Original Renovation Program	**1,187,506**

* Note: all figures in thousands of dollars.
Completed projects denoted with "c".

Fiscal Year 2001 in Renovation

From the perspective of BART riders, Fiscal Year 2001 will be marked by several highly visible milestones intended to improve the ridership experience. By the end of Fiscal Year 2000, more than 100 of BART's oldest railcars will have been completely renovated and returned to service. This renovation includes interior furnishings, heating and cooling systems, electrical, mechanical and propulsion systems. The complete overhaul of all BART station elevators is forecast to be completed by the end of Fiscal Year 2001. In addition, many of the station escalators are expected to be completely overhauled by the end of the fiscal year with final completion scheduled for the end of Fiscal Year 2002. Major progress is projected for the Automatic Fare Collection Equipment Modernization / Translink Implementation Project, as well as reliability improvements in the train control and traction power systems.

Beyond the Original Renovation Program

Since the adoption of the Original Renovation Program, additional vital renovation projects have arisen. Additional Track One *System Reinvestment Program* needs totaling $232.7 million have been identified and funding plans have been developed. When possible, BART plans to pursue grant funding for these projects. For example, additional rail replacement, traction power, and train control renovation needs have been identified and listed in Track One with outyear grant funding. In some cases, the urgency of projects, or ineligibility for grant funds, have dictated that the District use BART funds. For example, this year's CIP includes new projects and new BART funding for on-going capitalized station painting, relamping, reroofing and parking lot resurfacing.

Rolling Stock

The purpose of this program of projects is to replace and renovate those components and subsystems of BART's rolling stock that have deteriorated or are susceptible to malfunctions. Aging rolling stock has high associated maintenance costs and reliability problems and is a significant factor in service disruptions. Rolling stock renovation will greatly reduce major disruption and delays in revenue service, as well as extend the useful life of BART's revenue vehicles. Four of the seven Track One projects in this program are completed. These projects are listed for reference in the Track One Program Completed Projects tables in *Chapter Four*. Other projects are described below.

Track One Projects

A and B Car Comprehensive Renovation

The renovation of the District's original fleet of A and B Cars is essential to enable BART to continue to provide for current and future service demand levels. The District has one of the oldest average fleet ages in the transit industry. Before commencement of the A and B Car Renovation Program, these 439 cars had never been comprehensively overhauled during their 25 year lives. This project incorporates all elements of complete reconstruction – it will replace worn out and obsolete components and return the vehicles to their original design specifications. Systems being replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting. The renovation is intended to add twenty years of service life to the cars, improve their reliability, and bring them into compliance with the requirements of the Americans with Disabilities Act (ADA). Improved lighting, better handrails and more attractive, stain-resistant seat upholstery and carpets are some of the notable passenger comfort improvements.

The budget for this effort is $454.4 million. The funding program jointly adopted by BART and MTC for this project includes the programming of $239.5 million in federal Section 5309 Fixed Guideway funds, $30 million in federal STP and CMAQ funds, almost $17 million in state Proposition 108 and TCI funds, and $24 million in bridge toll funds. The funding plan requires BART to provide the balance of the funding, or approximately $144 million. To date, BART has committed $98.3 million, which came from a combination of BART funds, including $90 million from the 1999 sales tax revenue bond issue. $39 million of BART's remaining commitment will come from the Fiscal Year 2000 sales tax revenue bond issue with the balance from other BART funds.

The funding plan for this project is covered by a Federal Transit Administration (FTA) Letter of No Prejudice (LONP), which permitted BART to execute a contract for performance of renovation work in advance of actual receipt of most of the grant funds. The contract is comprised of a base order for renovation of the first 200 cars, fully covered by the LONP. BART has also contracted for the remaining 239 cars with annual cancellation clauses in the event that funding is not available.

C1 Car Midlife Overhaul

The overhaul of C1 vehicles at the mid-span of their design life will improve the customer environment, reduce future maintenance costs and greatly improve the reliability of the cars, encouraging additional BART ridership. This project will replace deteriorated floor panels and carpets, recondition car doors, upgrade the vehicle interiors, and overhaul and upgrade the air conditioning, propulsion and brake systems. This project will also renovate the C1 car cab exteriors and procure and install security cameras.

BART currently has programmed approximately $15.4 million of allocations from the operating to the capital budget between Fiscal Year 1999 and Fiscal Year 2001 to fund this project.

C2 Car Floor Panel Replacement

The floor panels in the C2 cars are of a honeycomb design that does not support the passenger loading. The panels have crushed and collapsed creating depressions under the carpet. This condition creates an uneven surface which may result in a tripping hazard. In replacing the existing panels with a newly designed floor panel, we provide a safer environment for our passengers and minimize potential falls which may result in personal injury claims.

Car Anti-Climbers

The Federal Transit Administration recommends the installation of anti-climbers on all BART rail vehicles. This project would design, fabricate and install anti-climbers on the X-end of A Cars, the X and Y-ends of B Cars and the X-end of C Cars. In the unlikely event of a train collision, anti-climbers provide the first line of defense against the tendency of cars climbing up one another and shearing off the roof of the bottom car. The installation of anti-climbers on revenue vehicles will reduce the likelihood of catastrophic injury to passengers in the unlikely event of vehicle climbing caused by vehicle collision accidents and/or hard couplings.

Track Two Projects

C1 Car Comprehensive Renovation

The C1 cars that went into service in the late 1980s will approach 20 years of operation by the end of this planning period. Ideally, these cars should begin a program of complete renovation, similar to that now underway and described above for the A and B cars, in the 2008-2009 timeframe.

Install Automatic Train Control Restoration Units

Failure of the on-board vehicle automatic train control (ATC) system, in addition to the wayside ATC, is one of the major causes of service disruption. This project is a retrofit of the existing systems, which will provide two valuable functions. First, the new units will dramatically speed recovery from such failures, thereby quickly returning to service temporarily disabled trains. Second, the new systems will capture and record critical information about failures, improving the efficiency of maintenance.

Car Door Closure Indicating Lights

Currently, the door closure indicating lights on some of BART's cars illuminate simultaneously as the doors close. This does not give hearing impaired individuals sufficient notice of door closure. This project would procure and install equipment in the C cars that would ameliorate this situation, causing the indicator lights to illuminate several seconds prior to door closure.

This project would procure and install equipment in existing District control cars (all C cars) to activate door closure indicating lights in rehabilitated A2 and B2 cars. This equipment will allow the District control cars that have not yet been through a mid-life rehabilitation program to activate the door close warning lamps on the rehabilitated cars. The returning A2 cars will trigger the door closure indicating lights at each open door – a warning to hearing-impaired passengers that the doors are about to close.

Fleet Upgrades

Similar to the C-1 Car Midlife Overhaul project described above, the rest of the BART fleet will benefit from periodic renovation to systems and passenger comforts, in order to maintain BART's reliability and customer service standards.

Vehicle Automatic Train Control Equipment

This project proposes to re-engineer the vehicle automatic train control (VATC) equipment design for fit and functional interchangeability with existing equipment but using currently available components and a later micro-processor with backward software compatibility. The resulting design can then be used to fabricate replacement boards and equipment for outfitting six unequipped renovated cars, for repairable inventory purchases, or for any project requiring higher performance from the VATC equipment.

Mainline

The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline that have deteriorated, or will deteriorate in the next ten years, due to age and use. Many components of the trackway and traction power systems are over 25 years old, and are failing with increased frequency. These systems must be reconditioned or replaced in order to maintain reliability and avoid service disruptions. Mainline renovation will prevent rail and traction power failures that would cause disruption and delays to revenue service. Of the 22 Track One projects in this program, ten are completed and are listed in *Chapter Four*.

Track One Projects

Berkeley Hills Tunnel Doors

The smoke control doors on the Berkeley Hills Tunnel (just west of Orinda across both BART tubes) are 25 years old and are beginning to fail. As the tube rises like a slanted chimney up from Rockridge, fans and doors were placed at the Orinda end of the Tunnel to pull out smoke in case of fire. The doors must be closable for the fans to perform. If the doors cannot be closed to seal the portal mouth, the effect of the fans would be nil.

The doors and related mechanisms are wearing out: routine maintenance time requirements are increasing and replacement parts are getting harder to obtain after a quarter century. During maintenance testing, if the doors fail revenue service on that door's tunnel bore would halt and "single tracking" would begin. This action would have a serious impact on BART's most-traveled line and on the system as a whole.

Blast Damper Retrofit

There are 38 blast dampers, which are designed to exhaust smoke in any emergency, located approximately 1000 feet apart in the Transbay Tube. These blast dampers are approaching 25 years old and, although they have been maintained throughout their life, are deteriorating to the point where they need to be either rebuilt or replaced. Although the preference is to rebuild the blast dampers, the retrofit process will involve an inspection followed by a determination if the damper should be replaced or repaired. This project would also involve installation of a power transfer switch that would convert the current power source, of 50% from San Francisco and 50% from Oakland, to 100% power from either side, in the event of an emergency.

Emergency Standby Power

The Uninterruptable Power Supply and Telecommunication System are battery operated and need those batteries to be replaced at periodic intervals. The previous battery replacement occurred over 5 years ago and those batteries are wearing out, necessitating system wide battery replacement.

Future Repaint Steel Girders for Corrosion Protection

Some of the steel girders that were installed in the system's original construction have not been painted in more than 20 years. Inspections have revealed that the original paint has deteriorated with signs of corrosion in the steel surfaces. Funds were allocated for the repainting of these girders and a three-phase program was implemented. However, nine original bridges were taken out from the last phase so that the more badly corroded John Daly, Junipero Serra and Washington bridge girders, which were installed in the Daly City Turnback Project, could be repainted. A follow-up project is needed to complete the program.

The original paint of the steel girders of nine BART bridges will be removed and new corrosion resistant coatings will be applied. If left untreated the structural integrity of these bridges may be compromised due to advancing corrosion. These bridges are: 105th Ave; Halcyon Ave; 55th St; Telegraph Ave; Hudson Ave; Pleasant Hill Rd; N. Main St; Walnut Creek Channel and Marine Ave. These are the last BART steel bridges that remain to be recoated. Eleven other bridges were recoated in the past 3 years (Phase I-III of the same program). This separate project, the fourth and final phase, completes the recoating of all BART steel bridges to last for the next 25 to 30 years.

Lake Merritt Channel Subway Repair

The subway just south of the Lake Merritt Station was constructed under the Lake Merritt Channel and has been leaking for a long time. Repeated attempts to seal the leaks have only partially mitigated the problem. Salt from brackish water intrusion, picked up and sprayed by passing trains, has caused corrosion in the reinforcing steel that in turn is causing damage to concrete components of the subway. This project will seal the subway to stop water intrusion through the subway walls, top slab and bottom slab, remove damaged concrete, remove corrosion from steel reinforcing bars, and apply new concrete to damaged areas to restore structural elements to their original strengths.

Replace Running Rail and Accessories

This on-going project periodically replaces curve-worn rail and switch components in high-density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require replacement on a three- to five year cycle.

In addition to the $16.7 million already programmed between Fiscal Year 1996 and Fiscal Year 2000, additional programming of $36.25 million is planned between Fiscal Years 2001 and 2010. Local match is planned to come in the form of bridge tolls programmed by MTC, however, BART may be required to provide local match and possible supplemental funding to grants.

Traction Power Equipment Renovation

This long-term program is rehabilitating a wide range of traction power components and subsystems that are aging and deteriorating, leading to lower reliability and higher potential for service disruption. Several traction power system renovation projects are well underway to address the District's immediate needs. These critical needs include the strengthening of third rail coverboards, the removal of asbestos from the 1000 volt breakers, the replacement of unreliable surge suppression equipment, the repair of worn-out 34.5kV cables, replacement of 34.5kV breakers and the upgrade of 1kV breakers. Other individual projects include rectifier reconditioning and the replacement of grounding systems, dielectric liquids in power transformers, traction power control batteries, switch enclosures and gas-pressure pipes.

The traction power system of the original system has been in continuous service for over 25 years. BART can expect future reliable service if continuous reinvestments are made in renovation of the key elements of this vital system. The current traction power system renovation projects are well underway and principally address the District's immediate needs. The next phase of renovation would continue to replace equipment that has reached the end of its service life and address the increasing power requirements of closer train headways. The following subprojects are proposed: replace and add transformers/rectifiers at key substations, replace transfer trip system cables, replace 1000 volt DC breakers, add 34.5kV cabling for system redundancy, and add redundancy for station power.

BART has already allocated $11 million in bond and other BART funds in Fiscal Year 1998 and Fiscal Year 1999 to begin this major project. MTC programming under Resolution 2672 and transit capital priorities includes a total of $36.4 million in Section 5307 and Section 5309FG funds over the period of Fiscal Year 2001 through Fiscal Year 2004 to continue the project. Additional Section 5309FG funds in the amount of $27 million are projected for this project between Fiscal Year 2007 and Fiscal Year 2010. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these periodic grants.

Transbay Tube Cathodic Corrosion Protection

This project will replace expended and missing cathodic devices and cables attached to the Transbay Tube metal exterior. Cathodic devices reduce the rate of corrosion to the skin of the tube.

Transbay Tube and Tunnel Ventilation

In case of a fire within BART tunnels, the District maintains a series of fans and other equipment to aid evacuation of passengers and employees and suppression of the fire. A previous project replaced all the old ventilation fan blades in tunnels and subways throughout the system. However, these new blades will themselves have to be replaced when they wear out in several years. This program will continue the phased rehabilitation of this equipment.

The TransBay Tube is now 25 years old. The 12 ventilation fans and the 38 dampers for smoke control in the Tunnel are severely aging. Major repairs would be undertaken to ensure their operation if there is a fire. In addition, funding would allow automation of the operation of the alternative power supply to the fans and dampers so that even the loss of PG&E power to either end will not impede smoke control.

The underground sections of BART have 74 ventilation fans to control the flow of smoke and to provide fresh air for evacuation in the case of an underground fire emergency. In addition, this equipment is routinely run for minor smoke evacuation, cooling of underground stations and to supply fresh air to BART maintenance personnel while working wayside. BART's current Renovation Program recently replaced fan motors and blades that have been determined by testing to have been at, or near, the end of their service lives. This project continues an aggressive on-going program to ensure that this safety critical equipment is reliable and operational at all times.

Track Two Projects

Replacement of Dry Standpipes at I-680 and Springbrook Crossings

This project will replace the dry standpipes at the I-680 and Springbrook crossings with wet standpipes.

Removal of Gaps in Emergency Handrails and Obstructions on Emergency Walkways

This employee safety project will repair the handrails and clear obstructions on emergency walkways.

Stations

The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. Track One of this program consists of 41 projects, 19 of which are completed and are listed in *Chapter Four*.

Track One Projects

Automatic Fare Collection Equipment Interim Upgrades

The purpose of this project is to design, procure and install material and equipment to maintain operation of the original automatic fare collection (AFC) equipment until the modernized AFC equipment is available to upgrade or replace the original equipment. The original AFC equipment consists of IBM equipment installed in the early 1970s and Cubic equipment installed in the early 1980s. The original equipment requires obsolete parts that are extremely difficult or impossible to obtain, even from component remanufacturers. Other components of the system are becoming extremely unreliable due to age. Still other components in the system, such as the IBM addfare logic, are obsolete and cannot handle recent changes in AFC operational requirements (e.g., fare increases, new ticket types). This project is ensuring the District's ability to effectively collect fares.

Automatic Fare Collection Equipment Modernization / Translink Implementation

The automatic fare collection (AFC) equipment in the BART system is approaching 25 years old and, therefore, is difficult and costly to maintain. This project will replace all ticket vendors, addfare machines and faregates. The project needs to be done in order to decrease revenue collection and maintenance costs through the use of more modern servicing modules, increase revenue security and accountability through the use of sealed coin and bill units, implement an upgraded Data Acquisition System, and increase equipment availability for customers. The urgency of the project is driven by the need to capture maintenance and security benefits, while avoiding deterioration of customer service levels as the existing equipment approaches the end of its useful service life. An additional need for this project stems from the regional multi-operator Translink "Universal" ticket program that will be integrated with the BART fare equipment.

In conjunction with MTC, BART has developed a financial plan to fully fund this project, currently estimated to cost $82.776 million. The original project cost was $77.776 million, but the recent determination by project staff of the need for 190 bits per inch technology increased the budget by $5 million.

As part of MTC's Resolution 2672 commitment, $21.3 million in federal Section 5307 funds were programmed in Fiscal Years 1998 and 1999. In addition, MTC programmed an additional $24 million of federal Section 5309FG funds for the project in Fiscal Year 1999. Also in Fiscal Year 1999, Alameda County, Contra Costa County and San Francisco County Congestion Management Agencies programmed an additional $6 million of STIP and STP/CMAQ funds for the project.

BART is seeking additional grant funds, including State Transportation Improvement Program (STIP) and federal STP funds over the next several years. BART revenues are programmed to provide local match and supplemental funding to grants.

Bay Point Station Telecommunication Project

As the end-of-line facility for the C-Line, the Bay Point complex serves not only as a station and terminal dispatch zone but also holds offices for Transportation, Train Control and the BART Police Department. The current telephone system is severely taxed and negatively impacts operational efficiency. The new upgraded system will provide additional communication lines to address 911 and call blocking requirements, as well as on-going voice mail, e-mail and faxing needs.

Energy Conservation at Embarcadero Station

The project will retrofit the existing station lighting systems at the Embarcadero Station with energy conserving lighting schemes. The work shall include removal and replacement of mercury vapor downlights at the platform edge, spotlight wall wash lighting, fluorescent uplighting and luminous ceiling diffuser at BART platform levels and mezzanine. The existing emergency lighting battery/charger shall be replaced with a new inverter system. Existing fluorescent lighting in all rooms shall be modified to achieve maximum energy efficiency including installation of sensor based lighting controls.

Fire Protection for Daly City Station Bicycle Lockers

Due to arson incidents at an East Bay BART station, all District bicycle lockers are to be protected against potential fire damage. By preventing fires, the project has safety elements for passengers, their property, and station staff. Grant funds have been secured to do this work at Daly City Station.

Future General Station Renovation Program

This project is a continuation of the General Station Renovation Program listed immediately below and now underway, renovating additional stations throughout the District.

General Station Renovation Program at Four Stations

This is a segment of a multi year program to improve the original BART stations. Stations being renovated under this project are the Union City, El Cerrito Del Norte, Lafayette and Powell Stations. Restrooms are being remodeled. Surfaces are being repaired, repainted and retiled as necessary. Weather-protection canopies and windbreaks are being renovated as needed. Repairs are also being made to concrete walkways that have been raised and damaged by growing tree roots and ground movement, causing tripping hazards. Worn station security gates are being replaced. Fire alarm systems are being replaced or reconditioned as appropriate. General station lighting and emergency lighting systems are being relamped and upgraded.

Rehabilitate West Oakland Lintel Structures

The platform lighting systems at the West Oakland Station are supported on concrete posts and lintels that are cracking and deteriorating due to vibration. This project would replace the lintels with a different type of structure less susceptible to vibratory damage.

Relamp Station Parking Facilities

This project will replace and upgrade fixtures, lamps and ballasts as necessary at District parking lots and structures to maintain safe and adequate lighting levels. The replacement of parking facility fixtures, lamps and ballasts is an activity which needs to be done on a recurring basis in response to regular wear and failure of the existing equipment.

Relamp Stations

Periodically, light fixtures in BART stations require replacement. This project would replace and upgrade station lamp fixtures and ballasts to maintain safe and adequate lighting levels. The replacement of station lamp fixtures and ballasts is an activity which needs to be done on a recurring basis in response to regular wear and failure of the existing equipment.

Repair and Replace Stair Tread Edges and Anti-Slip Treatments

The anti-slip treatment originally applied to help protect passengers from slipping and falling on station stairs must be renewed periodically in order to protect the safety of passengers, especially during wet weather conditions. This project would remove and replace existing stair treads with new strips of extruded aluminum which have abrasive materials inserted into the grooves to cover slippery steps and landings.

Repaint Stations

This project calls for repainting all previously painted surfaces at District stations. Work includes minor wall repair which may be necessary to provide a quality painted surface. The repainting of District stations is an activity which needs to be done on a recurring basis in response to regular wear of existing paint on the station surfaces.

Replace Bus Transfer Ticket Machines

The bus transfer ticket machines in the West Bay BART stations are increasingly unreliable, creating inconvenience for passengers who transfer to connecting bus services. This project is replacing 100 of these ticket machines. The 65 cashless machines used in East Bay stations have already been replaced. The 35 money-handling machines that issue San Francisco Municipal Railway (Muni) transfer tickets are yet to be replaced. The cash machine specifications will be developed in cooperation with Muni. This project is pending the completion of Muni's proof-of-payment study.

Replace Destination Signs

This project will remove the original-equipment destination signs and install new LED-based destination signs on 59 platforms at 28 stations. The work will include required upgrades to destination sign power and new control/communication to the signs. This scope excludes stations which already have new destination signs.

Replace Platform Edge Detectable Warning Treatment

This project will be needed to replace edge tiles that will have deteriorated over time. This project will remove existing edge tiles, prepare surface and provide new detectable platform edge treatments.

The existing platform edge tiles, intended to provide a visual and tactile warning of the adjacent drop-off into the trackway pit, have been worn heavily at many stations due to normal foot traffic, and are delaminating from the platforms as well. They are being replaced so that they will remain safe and functional. In addition, a third row of tiles will be applied as BART's recommended solution for "between car barriers."

Replace and Rehabilitate Escalators and Elevators

BART station escalators and elevators carry extraordinarily heavy loads, particularly in the various downtown subway stations. After 25 years of use and wear-and-tear, they are becoming unreliable and uneconomical to maintain and repair on a routine basis. The unreliability of many of these elevators and escalators is a significant source of passenger dissatisfaction. The 23 most unreliable escalators have been replaced, and all of the other escalators and elevators are being completely reconditioned.

Replace Station Public Address System

This project would upgrade BART's original public address system to eliminate severe sound quality and coverage problems. BART frequently receives complaints from customers and nearby local residences regarding these problems. Many announcements, some of which are safety related, are difficult to hear or understand. The system must also be upgraded to include the conversion of text to voice messages for the visually impaired community.

Reroof Station Canopy Roofs

As they age, station canopy roofs deteriorate, reducing their ability to protect passengers from the elements. This project replaces station canopy roofs on an annual basis. This project replaces the surface layers of the canopy roofs and includes other repair as necessary. The replacement of station canopy roofs is an activity which needs to be done on a recurring basis in response to regular wear to and failure of the existing equipment.

Resurface Parking Lot Pavement

This project is required to repair surface parking lots, the majority of which have not been treated or resurfaced since originally constructed. Subsurface failures, uneven surfaces, potholes, and general degradation of the wearing surface of the pavement are evident in parking lots throughout the system. This project will repair and resurface station asphalt surfaces. This work also may require restriping of spaces and directional information. The resurfacing of parking lot pavement is an activity which needs to be done on a recurring basis in response to regular wear to the existing facility.

Video Camera Surveillance Upgrades

The District currently has more than 300 cameras operating at various locations throughout the system. These are primarily older, low resolution black and white cameras which are used for viewing platforms and other broad station areas. Some of these images are routed back to LMA while others can only be viewed by the station agent. Most of these images are not recorded.

This project will provide a centralized video switching center where images from both old and new remotely controlled color cameras can be selected, recorded and managed for future reference and retrieval. It will be primarily oriented toward reducing theft from automatic fare collection ticket vendors, changers, add-fares and CAT machines. However, it will be expandable for any type of video surveillance application such as Transportation, Safety, Insurance, etc. In addition to the centralized equipment, this funding will provide equipment for one station as well. Additional stations can be added to the system as funding becomes available.

Track Two Projects

Additional Automatic Fare Collection Equipment Upgrades

In order to maintain a high level of service to BART customers, additional upgrades to the automatic fare collection equipment may be required.

Automatic Fare Collection Equipment Ticket Media/Print Technology

This project, if implemented, would convert BART tickets from paper to plastic ticket stock. The expected benefit of such a conversion is the increased reliability and availability of fare collection equipment. Options to be investigated may include changes in ticket printing.

Elevator Cameras

This project would install closed circuit television cameras for security and passenger safety in BART station elevators.

Emergency Egress Lighting Rehabilitation in 25 Stations and 16 Tunnel Sections

The existing emergency egress lighting in 25 of the original 34 BART Stations, including three BART/Muni joint stations, went in to service in 1972 when the BART system was built. These systems are now failing and replacement parts are no longer available. This project will replace the back up power systems with modern ones, which are self testing. Also included is the provision of back up power to the tunnel lighting, which currently goes dark when PG&E power fails. This is a recent recommendation of the National Transportation Safety Board.

Energy Conservation

The project will retrofit the existing station lighting systems at the BART stations with energy conserving lighting schemes.

Fire Protection for 232 Bicycle Lockers

This project would protect 232 bicycle lockers in Contra Costa County from potential fire damage. Several bicycle lockers have been set on fire by arsonists at BART stations.

Fire Suppression Equipment in San Francisco Stations

All underground stations have an undercar deluge system to suppress undercar fires. Fire marshalls now require these systems to be connected to the station's wet standpipes (existing) rather than relying on fire department connections with hoses. The work will include nine stations in San Francisco.

Future Energy Conservation

The project would retrofit the existing station lighting systems at stations with energy conserving lighting schemes. The work shall include removal and replacement of mercury vapor downlights at the platform edge, spotlight wall wash lighting, fluorescent uplighting and luminous ceiling diffuser. The existing emergency lighting battery/charger shall be replaced with a new inverter system. Existing fluorescent lighting in all rooms shall be modified to achieve maximum energy efficiency including installation of sensor based lighting controls.

Future General Station Renovation

The appearance of a station directly affects the public's perception of BART. Maintaining station function and appearance over the long term requires periodic renovation projects. The existing Systemwide Renovation Program has renovated sixteen of the original thirty-four stations, with four more currently underway. This new program addresses the remaining stations. The renovation work includes: painting station interiors and exteriors; accessibility bathroom rehabilitation; landscaping improvements and energy efficient light fixture replacement; improvements to the station agent's booth and employee facilities; replacement of rolling grill doors; replacement of fire alarm systems; replacement of emergency exit lighting; renovation of drains and rehabilitation of landscaping and irrigation systems.

Remote Monitoring for Escalators and Elevators at Extensions Stations

The present escalator renovation project includes installation of a remote monitoring system. This system will provide a central monitoring station inside BART Central Operations and at the Oakland Shops. Whenever any escalator or elevator stops functioning, a message will be sent to both monitoring stations and will identify the cause of stoppage. The remote monitoring provides immediate and automatic notification to Central and Maintenance of any escalator or elevator stoppage. This eliminates the delay of notification from the Station Agent and also provides more accurate information of the cause of the problem. With accurate information, maintenance crews can be better prepared to correct the problem when dispatched. This project includes the extension stations, connecting them to the remote monitoring system installed in the escalator and elevator renovation projects.

Replace Closed Circuit Television Security

This project will replace the original closed circuit platform television system that will have outlived its projected useful life. In addition, new security cameras will be installed in the core stations that will focus on the AFC equipment. This type of security surveillance is now in service at the five new stations.

Replace Grille Doors at BART Stations

The project would replace grille doors at BART stations throughout the District. The public, BART employees, and property are put at risk when station grilles fail, a condition that occurs without warning. When grilles fail, the station must be secured to prevent general vandalism and destruction of fare collection equipment if thieves attempt to steal money from the currency vaults. If a grille fails during station closing, BART employees must manually lower the grille, an exertion that has caused injuries to station agents and customer assisting agents. If the grille door cannot be closed, the station must be patrolled by District Police.

BART will also install a new door on the concourse separating Amtrak's from BART's property at the base of the platform stairs to prevent unauthorized entry to the concourse area from the trackway. BART's fare collection equipment has been damaged and untold amounts of money stolen by burglars using the trackway as access.

Replace Yard Public Address System

This project will replace the original yard public address system that will have outlived its projected useful life.

Replacement of Hydraulic Lift Cylinders

This project would replace the hydraulic lift cylinders in BART maintenance facilities.

Replacement of North Berkeley Station Ceiling

This project would replace the North Berkeley Station ceiling, which is deteriorating.

Replacement or Renovation of Garage and Other Elevators

Many of the Districts' non-station elevators are at, or near, the end of their service lives. This program would evaluate each elevator unit to determine if it should be replaced or renovated, similar to the District's present renovation program of

BART station elevators. This program would include BART's main office building units, parking structures, and shop buildings. Many of these elevator units are over 25 years old and replacement parts are becoming more difficult to obtain.

Controls & Communications

The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. This program includes 25 Track One projects, ten of which are completed and are listed in *Chapter Four*.

Track One Projects

Advanced Automatic Train Control (AATC) Phases I-III

BART is currently testing, and will subsequently install, an advanced train control technology, which will enable the BART system to nearly double its train carrying capacity. When implemented between Bay Fair and Daly City stations, this project will allow system throughput to increase from the current 21 trains per hour up to 30 trains per hour. The system will be installed over the existing control equipment with relative ease and no service disruptions. AATC will permit more accurate monitoring of train location, allow reduced run times and, thereby, increase the efficiency of the vehicle fleet. The project will help BART to meet the increased demands on the system, as headway reductions become necessary in the future, as well as displace significant needs for train control renovation.

The research and development phase was carried out with a combination of federal defense conversion funds, matched by private sector and BART funds. Grant funding in the amount of $47.1 million for implementation of AATC on the M- and upper A-lines has been secured from state and federal sources. BART has generated the local match to this grant.

Augmentation of Police Radio Coverage

Due to inadequate police radio coverage on the R-line, additional antennas were installed to enable emergency police field communications.

Computer Aided Dispatch and Record Management System for BART Police

This project will provide the Police Department with a "real time" Computer Aided Dispatch (CADS) system, integrated with other law enforcement database retrieval systems with the ability to immediately extract requested suspect and vehicle information. The CADS system will be integrated with the Records Management System (RMS) which will automatically log and document information required by the California Public Records Act. Information retrieval requests would take minutes versus the hours required with the current system. This system would free up more patrol time for officers and eliminate redundant information requests by dispatch resulting in increased efficiency in the entire Police Department.

Fiber Optic/ Radio Telecommunications Network (TRACS)

This project is furnishing and installing a systemwide fiber-optic and multi-frequency trunked radio network to replace the equipment used by train operations, station operations, BART Police, and maintenance forces. The old radio system had several significant shortcomings, both in terms of capacity and reliability, which had frequent negative operational impacts and occasionally would affect passenger safety. Use of the fiber optic cable is being licensed for commercial users, with significant long-term revenue potential.

Additional scope has been added to this project to accommodate underground paging capability. At the present time, work crews are able to be paged using a special feature of our legacy radio system. When the new trunk radio system is in use, this paging capability will no longer be available. In addition, maintenance telephones will not be installed in the SFO airport extension underground areas. Consequently, an underground paging capability needs to be added to the new radio system.

Improvement of Operations and Fire Protection Radios

This project procures additional radios for operations and fire protection personnel.

Integrated Computer System

The Integrated Computer System provides supervisory capabilities to train controllers in the central control center, providing a central display of railroad activity and enabling remote control of train movements throughout the system.

NXTGEN Program

This project is replacing obsolete on-line operational computer control systems. The systems being replaced are the Destination Sign System (DSS) software, the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the Central Computer System (CCS). This project is needed to replace the 25 year-old computers running the DAS and DSS systems and the 15 year-old CCS computers.

Replace Original DTS Data Communications System Equipment at 44 Locations

BART is a highly automated mass transit system. A complex set of remote and central computer systems monitors many support functions, including train operations. To best manage this distributed system, it is necessary to continuously monitor and control this equipment automatically. The overall supervision of this system is performed in BART's Operations Control Center (OCC), where OCC staff receive data from every BART station control point. The original data communication system, called the Digital Transmission System (DTS), is the key means to bring this data to the OCC. The DTS provides digital communications between the central computer system (CCS) at Lake Merritt and all original BART passenger stations, yards, the Transbay Tube, and the Berkeley Hills Tunnel. The DTS is part of the first-generation BART equipment and 25 years later represents a system that is difficult to maintain, lacks sufficient spare parts, and has some components that cannot be replaced with modern components.

With the construction of BART's new extension stations, the DTS was replaced with the Supervisory Control & Data Acquisition System (SCADA). This system represents the new technology standard that will serve the District well into the new millennium. This project will replace the District's original data communications system with the new SCADA system at 44 locations within the original BART system.

Replace Workstation Consoles in Central Control

This project is replacing existing Central Control workstations that are obsolete and cannot be expanded. This project provides the display hardware, local area network (LAN) interface equipment, software, installation and testing to make the units fully functional in BART's Central Control facility.

Replacement of Interlocking Relay-based Logic with Microprocessor-based Logic

The existing interlocking relay-based logic controllers, a critical element of the train control system, are 30 years old. Most of the relay equipment is no longer manufactured. The industry is moving to microprocessor-based controllers. Consequently obtaining interlocking type relays is increasingly difficult. Lead-time for procurement is now a minimum of 20 weeks. The existing relay physical plant has aged to the point where the relays are physically deteriorating. Relay logic controllers will need to be refurbished or replaced. To improve the service operations, the relay-based logic controllers have been expanded over time and presently are at capacity. Future expansion of the existing relay logic controllers is very difficult and expensive. Replacement of the relay-based logic with microprocessor-based logic will resolve the capacity issues of space, power, and logic size.

Replacement of Yard Voice Recorders

By state law, all operational and/or safety related radio and telephone conversations which transpire in connection with operations in the District must be recorded. At the present time, such communications associated with the yard and shops operations are recorded at those locations on extremely obsolete equipment. This equipment is unreliable, difficult to use and it is almost impossible to find spare parts for these units. In addition, tape "recycling" and management is a constant challenge. Consequently, centralized, reliable and manageable recording of these channels is extremely urgent.

Richmond and Daly City Yard Console Replacement

The control console in the Richmond Tower is 30 years old. The equipment is obsolete and difficult to maintain. The Daly City console is ten years old and supporting electronics have been heavily modified to support the Colma expansion. In addition, the Daly City equipment is obsolete and spare parts are an issue. All this equipment is vital for the day-to-day operation of the yards and continued performance needed to meet the requirements of yard operations.

Upgrade Telecommunications Switches

This project will upgrade the District telephone switches to accommodate additional users, provide capacity for the SFO Extension and provide for Districtwide '911' service. It includes hardware, software, installation and training for all of our 19 switches as well as connectivity to the statewide Pacific Bell '911' system. At the present time, there is no identification of the location for any 911 calls originating within the District. No upgrades have been made to the system since it was installed over five years ago.

Wayside Train Control Equipment Renovation

This is a long-term program to replace vital train control components and subsystems that are becoming unreliable due to age, and difficult to maintain due to obsolescence. Many of these components are no longer being produced or supported by the original manufacturers. If this work is not completed in a timely manner, essential train control hardware failures could lead to extensive service disruptions. This program is also replacing the Sequential Occupancy Release System (SORS). SORS is a back-up safety system required by the California Public Utilities Commission to ensure that on-line trains maintain a safe separation distance in the event of any malfunction or failure of the main train control system. The original primary SORS computer is 25 years old, obsolete, and becoming difficult to maintain. This safety-critical system must remain operational and reliable.

BART has already allocated $4.8 million of bond funds to initiate the project. MTC programming under Resolution 2672 included $4 million of federal Section 5307 grant funds in Fiscal Year 1999 and a total of $33.4 million of Section 5307 funds over the period Fiscal Year 2000 through Fiscal Year 2004. Additional Section 5307 funds in the amount of $22.1 million are being sought for Fiscal Year 2007 through Fiscal Year 2010 to continue funding this project. BART, or other non-federal revenues potentially including bridge tolls, will be required to provide local match and possible supplemental funding to these periodic grants.

Wayside Wiring for Interlocking - Replace Underground

By the time this project is commenced, the wayside wiring may be 45 years old. The design life of the wire, however, is estimated at 40 years. This project will replace the interlocking power and control wiring from the switch machine to wayside junction boxes. All such wiring on the core BART system would be replaced in coordination with the replacement of wooden ties at interlockings.

Yard Cable Plant Replacement

This project will replace the cable plant at BART yards.

Track Two Projects

Business Systems Modernization and Upgrade

The District's core business systems are approaching 20 years of age and many of the business processes utilized today are being driven by those 20 year old systems. The processes are manually intensive, time consuming, prone to data-entry errors and corresponding correction processing. More importantly, they do not easily allow for the automation of tasks. In addition, internal business software that has been developed during these last 20 years has been restricted in capabilities due to the nature of the core systems and their processes. The last thorough review of this type occurred in 1983. A more recent review of the Business Systems, projected to be underway during the initial time frame of this document, will result in an implementation plan for modernization. Included in the functions which will undergo modernization are the General Ledger, Accounts Payable, Purchase Order System, Maintenance Systems and Inventory Systems.

HVAC Improvements at Montgomery Station Train Control Room

This project would provide a split system air conditioning unit with supply and exhaust air duct, and supply air diffusers, to reduce the ambient room temperature caused by the heat rejection of the electrical panel and uninterruptible power supply. If the air conditioning fails, critical equipment in that train control room could fail.

Installation of New Yards, Shops and Towers Systems

This project will install new systems at BART yards and shops.

Network Equipment Modernization and Upgrade

There is an ever-increasing need for additional information-based services at the desktop of District personnel. For example, interaction with other agencies, contractors, suppliers, etc. is required at an accelerating rate. The architecture of the present office network will be unable to support these requirements including the requirement for much faster speeds. In addition, spare parts will no longer be available for this equipment. Parts for networking equipment are typically stocked for about a five year period at best.

This project will replace all the District data networking equipment. This includes approximately 50 network hubs which have been in service for many years to support the personal computers in most District offices, as well as those which support approximately 60 operational locations, such as station agent booths, radio transmitters, AFC equipment, destination signs, train control equipment, etc. Much of the cabling for the office computer network will need to be replaced as well. In addition, this project would expand the network bandwidth.

Replace District Telephone Systems

This project will replace all of the District telephone systems. This includes the nineteen PABX switches at BART offices, all of the extension stations, the line offices and all of the telephone instruments connected thereto. Certain portions of the telephone cable plant will also need to be replaced. PABX software will be required to meet the increased demands of operations.

As the equipment ages, spare parts will no longer be manufactured for much of this old equipment, making it very difficult and costly to maintain. In addition, many enhanced communication functions will be required that the present equipment does not provide. These capabilities will include voice/data integration, digital

Internet access and video conferencing support among others. This project will utilize the fiber optic "back-bone" being installed in the Track One program.

Replace Operating System Computer Hardware

The high performance computers necessary to run BART's operating systems will become more difficult to maintain as they become older and technology changes. The main operating computers should therefore be replaced every seven to ten years to ensure that these critical systems for operation of BART trains and data collection systems are reliable and maintainable. This cycle necessitates that the District plan well in advance to ensure that a seamless transition to new computing equipment can take place before serious system disruptions occur.

The operating computer system controls and supervises many of the key operating systems of the District. These include: Operation Control Center (OCC), Data Acquisition System (DAS), Destination Sign System (DSS) and BART station computers for line functions such as the interface from credit/debit vendors to the District's bank for ticket purchases. All of these systems have been incorporated in the current Track One NXTGen project that will be completed soon. The NXTGen program was designed with an "open system" architecture that will facilitate the future hardware renewals that this program proposes. This program will utilize the benefits of the software "open system" to purchase new computers to serve the District's ever increasing transit operations computing needs.

Facilities

The purpose of this program of projects is to address the deterioration of the shops and yards due to 25 years of continuous use and age, and to provide adequate facilities to store and maintain a growing fleet of revenue vehicles. Some of these projects will improve passenger transit service by improving revenue vehicle reliability through better maintenance, by reducing vehicle out-of-service time, and by keeping as many vehicles in service as possible. These projects will improve the safety of the shops and yards, provide cost savings to the District by reducing maintenance turn-around time, eliminate travel time to and from vendors and improve the efficiency of the shops and yards by providing employees with dependable equipment. 16 of the 25 Track One projects in this program are completed and are listed in *Chapter Four*.

Track One Projects

Daly City Yard and Shop Improvements

The Daly City Yard, adjacent to the Colma Station, needs a program of minor rehabilitation and replacement improvements to ensure the efficient maintenance of BART revenue vehicles. Some of the improvements are safety related (window change-out platform), one will benefit BART passengers and equipment (bird netting at Colma and Daly City Yard), and all will assist in reducing BART maintenance costs and increasing efficiency. None of the projects are linked to the BART-SFO Extension.

Employee Facilities Improvements

Most of the infrastructure of employee worksites in the maintenance shops, training facilities, warehouses, and the Cash Handling Building has not changed substantially since the BART system opened. This project is providing basic essential reconditioning and remodeling as needed to create acceptable work environments.

Hayward Stores Roofing

This project, similar to the more system-wide reroofing project described below, will replace the roof on the Hayward Shops Inventory Storage facility.

Hayward Training Classroom

A replacement training facility to provide additional classroom space for; expanding Operation's Department core training programs and associated equipment; new hire and upward mobility programs; to accommodate new training technologies such as computer based training (CBT) and a train operator training simulator.

MetCenter Capital Reserve

This covers BART's share of an annual payment into a Capital Improvement Reserve fund for the MetCenter Office Building. Other tenants of that building who contribute to the MetCenter Capital Reserve are the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG).

Renovation of Hayward Yard Train Washer Facility

The facility used to wash the exterior of trains at Hayward Yard is still the original system installation. It is becoming increasingly inefficient, and has difficulty complying with current standards for containment and treatment of wastewater. This project will bring the Hayward Yard train washer back up to full operation, and also provide wastewater controls.

Renovation of Richmond Yard Train Washer Facility

The facility used to wash the exterior of trains at Richmond Yard is still the original system installations. It is becoming increasingly inefficient, and has difficulty complying with current standards for containment and treatment of wastewater. This project is bringing the Richmond Yard train washer back up to full operation, and also providing wastewater controls.

Reroofing at the Shops and Other District Facilities

Some District buildings, such as the shops, still have their original roofing systems that are in poor condition. Typically, the original roofing systems have numerous bubbles and are brittle. These conditions indicate loss of adhesion between plies caused by water intrusion. Furthermore, most of the flashings are blistered and cracked. Some areas of the roofs feel spongy while some areas are depressed. These conditions indicate wet or deteriorated roof insulation. This project will remove roofing, insulation and flashing at all revenue vehicle shops, non-revenue vehicle shops and maintenance shops throughout the District, and replace them with roofing systems that are guaranteed for 15 years. These roofs must be replaced periodically as they deteriorate due to age and exposure.

Track Two Projects

Facility Painting and Repair

This project calls for repainting all previously painted surfaces at BART facilities. Work includes minor wall repair which may be necessary to provide a quality painted surface. The repainting of BART facilities is an activity which needs to be done on a recurring basis in response to regular wear of existing paint on the station surfaces.

Fire Alarm Installation at Madison Square Office Building

Fire protection system in Madison Square Office Building is not up to current code. This project would bring this building into compliance.

Grease/Oil Facilities

This project would replace the grease and oil collection facilities in BART maintenance facilities.

Lake Merritt Building Renovation

As the Lake Merritt Administration Building ages, it is likely to require renovation.

Oakland Shop Fuel Facility Replacement

The project calls for the replacement of all above surface pumping equipment at the Oakland Shops fuel service area. The current pumps are significantly outdated, and experience extended down time.

Office Consolidation

The space BART currently leases for its administrative functions will be up for renewal in the near future. If and when those leases are renewed it will be at the full market value for office space rental in Oakland, which would be significantly higher than the rates in the current lease agreements. One strategy is to continue looking at opportunities to consolidate full or partial BART administrative facilities for its staff in either a new lease or ownership situation.

Overhead Cranes Renovation at Shops

The overhead bridge cranes in the four shops are over 25 years old, and many of their major components are near the end of their service lives. In addition, they do not meet new seismic requirements for heavy-duty cranes. This equipment is used on a daily basis in the repair and maintenance of the BART fleet. The age of the equipment has made it difficult to find replacement parts. This project will renovate these cranes with modern components that will improve crane reliability, safety, and performance.

Rehabilitation of the TransBay Tube Facility

This project would renovate a facility, located near the East Bay entrance of the TransBay Tube, which houses equipment.

Relamping at Shops and Yards

Periodically, light fixtures in BART shops and yards require replacement. This project would replace and upgrade lamp fixtures and ballasts to maintain safe and adequate lighting levels. The replacement of lamp fixtures and ballasts is an activity, which needs to be done on a recurring basis in response to regular wear and failure of the existing equipment.

Renovation of Concord Yard Train Washer Facility

The facility used to wash the exterior of trains at Concord Yard is still the original system installation. It is becoming increasingly inefficient, and has difficulty complying with current standards for containment and treatment of wastewater.

This project will bring the Concord Yards' train washer back up to full operation, and also provide wastewater controls.

Replace Maintenance Pit Lighting

The wall mounted lights in the revenue vehicle shop maintenance pits will be replaced with upgraded marine type wall lighting. The current lights are corroded and do not provide adequate illumination.

Resurfacing of Roads and Parking Lots

This project is required to repair surface parking lots and roads at BART facilities, the majority of which have not been treated or resurfaced since originally constructed. Subsurface failures, uneven surfaces, potholes, and general degradation of the wearing surface of the pavement are evident in parking lots and roads at BART facilities throughout the system. This project will repair and resurface asphalt surfaces. This work also may require restriping of spaces and directional information. The resurfacing of parking lot pavement is an activity, which needs to be done on a recurring basis in response to regular wear.

Shop Roll Up Door Replacement

This project would repair or replace the roll up doors at BART maintenance facilities.

Transbay Tube Upper Gallery Lighting

This project provides for replacement and upgrading of TBT upper gallery lamps and ballasts. It also will provide for cleaning as necessary to gain safe access to work areas.

Yard Lamp Pole Retrofit

This project will provide for the retrofitting of the high mast lighting poles at the Hayward, Concord and Richmond maintenance yards to eliminate the need to climb the pole when changing out lamps.

Work Equipment

The purpose of this program is to replace worn and obsolete maintenance vehicles, service vehicles, and maintenance equipment. The equipment includes such items as tools, power generator sets, light towers, ground and building maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police vehicles, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

BART's maintenance equipment gradually becomes worn from frequent use. Eventually, it becomes more economical to replace the old equipment rather than to repair it. The ongoing equipment replacement program ensures that old, worn out equipment is replaced regularly to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to passengers will deteriorate.

Track One Projects

Capital Equipment: Maintenance and Engineering Department

This project provides for routine scheduled replacement of capital equipment used by BART's maintenance and engineering department.

Capital Equipment: Non-Operations Departments

This project provides for routine scheduled replacement of capital equipment used by BART's non-operations departments.

Capital Equipment: Other Operations Departments

This project provides for routine scheduled replacement of capital equipment used by BART's operations departments.

Non-Revenue Vehicles

BART maintains a fleet of non-revenue rail vehicles and automotive-type vehicles. This project provides for routine scheduled replacement of these vehicles.

Non-Stock Inventory (repairable parts provisioning)

This program maintains adequate inventory of all high-value repairable parts in support of trains, station and field equipment, and automatic fare collection equipment. Failure to provide for these requirements could lead to vehicles being out-of-service and disruption in maintenance and service operations. This ongoing need must be funded annually.

Spare Parts

The District maintains an inventory of spare parts for its revenue rail vehicles and other equipment. This project procures quantities of spare parts. This project is not fully funded. A portion of the cost is listed in Track Two.

Track Two Projects

Computer and Network-related Equipment

From time to time, the District must replace and/or upgrade its computer and network-related equipment.

Spare Parts

This project is the unfunded portion of the spare parts project.

SEISMIC RETROFIT PROGRAM

The earthquakes of Loma Prieta in 1989, Northridge in 1994, and Kobe in 1995 have caused seismic engineers and geologists to re-evaluate design codes, particularly in areas where structures are very close to active faults. The Hayward Fault is of great concern because of its close proximity to the District's Dublin/Pleasanton, Concord, Richmond and Pittsburg/Bay Point lines. Seismic experts have estimated a one in four chance of a major earthquake of a magnitude 7.0 or greater at a location on the Hayward Fault within the next 30 years. An earthquake of this magnitude has the potential to cause serious damage to BART structures. The damage caused by such an earthquake could require significant repair and replacement of components of the system.

While BART's original designers utilized seismic design standards that greatly exceeded standards of the time, new understanding of seismic ground movements combined with computer analysis tools have changed the way engineers design for earthquakes today. BART structures, when examined using today's criteria, require a retrofit upgrade program to ensure satisfactory performance through a major seismic event. This program addresses the single pier viaduct structures, which are likely to be most vulnerable in an earthquake, in addition to other trackway structures, stations and buildings of the District.

In addition, the seismic joints of the Transbay Tube, located at each end of the Tube, require re-adjustment. These joints were designed to permit independent movement, but from settlement over time and the Loma Prieta Earthquake, have lost some of their capabilities to move and adjust in a major earthquake. This program would restore their capability to nearly the original range of free movement.

The program is to be implemented in four segments over a period of seven to nine years:

Segment I: Caltrans Local Seismic Retrofit Program

After the Loma Prieta Earthquake, the California State Legislature passed a 1989 law that charged Caltrans with the responsibility to review all publicly owned pedestrian, vehicular, and rail transit bridges over city and county roads and streets. This law also mandated that Caltrans retrofit any such structures determined to be vulnerable to collapse during a severe earthquake. As a result, Caltrans established the Local Seismic Retrofit program to accomplish these tasks. The BART system has many transit bridges over city and county streets and, therefore, was included in the program. Caltrans, with BART's assistance, completed an inventory of BART bridges that identifies 261 bridges that cross over city or county streets. Of that total, 34 are extension bridges that were designed to the latest BART seismic criteria. The remaining 227 structures are bridges of the original system and qualify now for inclusion in the program. Caltrans will do a seismic safety screening to determine if any of the 34 extension bridges will be included in the program.

The purpose of the program is to upgrade the facilities of the original system such that their seismic-resisting capabilities are consistent with the newer extension facilities, which were designed and built to higher design standards.

Under Caltrans' program, seismic retrofits are to meet a Non-Collapse Standard. This performance standard allows major damage to structures during a major earthquake as long as collapse is prevented. BART's needs are more appropriately met by retrofitting to a BART-defined Serviceability Standard. This stringent performance standard allows only a minimal damage to facilities during a major earthquake to ensure resumption of operations after minimal delay. Acknowledging the need for this stringent performance standard, the BART Board of Directors passed a resolution requiring that seismic retrofits of BART facilities are to be in accordance with the Serviceability Standard.

Seismic retrofit to meet Caltrans' standard has built-in requirements that automatically trigger the kinds of retrofit that will also meet BART's standard. For that reason, the differences between the two standards in a large number of BART's bridge structures are not as great as their descriptions may suggest.

Caltrans will fund 100% of eligible BART retrofits up to Caltrans' Non-Collapse Standard. Reimbursable costs include engineering, management, construction and support overheads. Per Board Resolution, retrofits under the Caltrans program will be upgraded from the Non-Collapse to BART's Serviceability Standard. The cost of the upgrade is to be borne by BART and must be pre-determined and accepted by both parties before the program can proceed to succeeding phases.

Segment II: Core System Retrofit Program

Segment II will retrofit aerial structures not included in the Caltrans Local Seismic Retrofit Program, from the South Hayward Station to the Oakland Wye; from the west portal of the Berkeley Hills Tunnel to the Wye; from Ashby Station to MacArthur Station; and from the Wye to Colma station. *Segment II* also includes adjustment of the seismic joints in the Transbay Tube. The objective of *Segment II* is to ensure a core system of operation, with turnbacks for each trunk and access to the Oakland and Daly City shops, as well as Hayward Yard. In addition, *Segment II* includes a systemwide seismic safety study, further described in the *Studies, Research and Development Program*, that will identify the critical seismic retrofit needs of the BART system. *Segment II* will then retrofit those stations deemed to be seismically most at risk by a systemwide seismic safety study.

Segment III: Aerial Structures and Aerial, At-Grade & Underground Stations Program

Segment III will retrofit the remaining single pier trackway structures south of Hayward Yard (Fremont line), north of Berkeley (Richmond line), and east of Orinda (Pittsburg/Bay Point line). *Segment III* will also include other stations deemed to be at risk by a systemwide seismic safety study, but not addressed in *Segment II.*

Segment IV: All Other BART Facilities Program

Segment IV will retrofit BART facilities and other structures deemed to be seismically at risk by a systemwide seismic safety study, and not covered by the previous segments.

Track One Projects

Caltrans Local Seismic Retrofit Program

This Caltrans-sponsored project will implement the seismic improvements to the BART structures identified by the engineering study as preliminarily described under *Segment I* above. This project element is listed as Track One on the basis of Caltrans' funding commitment. Caltrans and BART are currently evaluating the project scope and cost. $200 million is an estimate of the cost to retrofit portions of the BART system that cross over highways and local streets. A Regional Rehabilitation Program grant of $3 million has been programmed for the project. In addition, BART has allocated $10.3 million to the Local Seismic Retrofit Program, $2 million of which will fund a systemwide seismic vulnerability study listed separately under *Studies, Research and Development.*

Track Two Projects

The remainder of the Seismic Retrofit Program is currently listed in Track Two. This portion of the program will be defined more explicitly to reflect the results of a seismic vulnerability study currently underway.

The District is continuing to review and pursue funding options for the $610 million Track Two portion of the Seismic Retrofit Program. Potential funding options include federal and state grant funds, general obligation bonds, sales tax revenue bonds and other financing mechanisms. In reviewing alternatives that might generate sufficient funds to support the program, BART staff has also looked at state level general obligation bonds, gas tax subventions and an extension of the seismic surcharge on the Bay Bridge.

SERVICE AND CAPACITY ENHANCEMENT PROGRAM

The purpose of this program of projects is to improve service provided to existing BART passengers and to address system capacity constraints by adding accessibility improvements, improving access to BART stations, adding track for enhanced delay recovery and constructing other passenger service, system capacity, and station area improvements. Of the 35 Track One projects listed in this program, 12 are completed and are listed, by subprogram, in *Chapter Four.*

Getting the most capacity from the existing BART system is a major strategic focus for BART in the coming decade. Expanding system capacity is integral to continued customer satisfaction. And it is an important part of good fiscal management because it maximizes the value of the original investment in the core BART system.

Service and capacity enhancement starts with station access. Access to BART is an extremely important issue for BART customers. Capital improvements to support enhanced access to BART include expanded parking capacity, improved pedestrian and bicycle access and better intermodal transit connections. Also included are projects developed in partnership with local communities and private developers to provide additional housing, services, and employment near BART stations.

Inside BART stations, waits for automatic fare collection vending machines and gates and overcrowding on elevators and escalators impact the customer experience at BART. To improve customer satisfaction and ensure system capacity into the future, BART must undertake a series of capital projects to expand the automatic fare collection system and to add more vertical circulation on elevators and escalators. Access to and egress from stations need to be improved and expanded, and other architectural improvements also need to be completed to ensure that all elements within each station work together to promote a smooth flow of passengers and a positive experience for riders during peak periods.

As ridership continues to grow, the passenger experience on board the system is impacted by car capacity and configuration and by the capacity and configuration of train control, traction power, and mainline track systems. As BART looks to renovate or replace its fleet of C1 and C2 cars in the next ten years, new car designs will need to be considered, including modified door and seat configurations. Additional cars will also need to be purchased to support future growth. New technology will also continue to play a role in expanding core system capacity. A new Advanced Automatic Train Control system will be ready for revenue testing within the next year. The new system, which will allow more trains to operate at closer intervals, needs to be installed on the entire BART system. Mainline track expansion and reconfiguration is also a critical element in any service and capacity enhancement plan. BART, as originally designed, has very limited track flexibility. Capital projects to increase track flexibility include crossover tracks, pocket tracks and side tracks. These projects are aimed at improving delay management and the capacity of the system in the future to carry more passengers through the use of more flexible routes and schedules. Finally, as more trains run on more track, the core system traction power supply will need to be expanded and upgraded to accommodate more demands.

BART is now undertaking a 30 year *System Capacity Study*, to very specifically determine the capacity limitations of the individual components of the BART system and the system as a whole. This study, which will be conducted in several phases over the next year, will include a detailed set of recommendations for enhancing and expanding the core system. However, many needs are already clear and preliminary projects to address these needs have been developed. These projects are included in this section of the *CIP*. As the *System Capacity Study* is completed, these projects will be defined in more detail, cost estimates will be refined, and more projects will be added to address additional needs identified through further study. Projects will also be prioritized to ensure that funding and construction maximize efforts to address system capacity in a cost effective and orderly way.

Many of the measures necessary for significant system service and capacity enhancement involve long lead times for planning, funding, and construction. It makes sense to plan now for projects that will influence the quality and quantity of service BART can provide well into the next several decades.

Rolling Stock

Track One Projects

There are no Track One projects in this subprogram

Track Two Projects

Additional Car Procurement

The C1 Car Midlife Overhaul has provided BART with a fleet of cars, which should operate soundly for nearly 10 years. At the end of the 10-year time frame BART will be faced with the need to purchase new cars, in addition to renovating or replacing the existing cars. It is estimated at this time that BART will have a need for approximately 100 new cars.

Other Rolling Stock System Capacity Capital Needs

As the *System Capacity Study* progresses, capacity-increasing rolling stock projects may surface.

Mainline

Track One Projects

There are no Track One projects in this subprogram

Track Two Projects

C-Line Crossover South of Pleasant Hill Station with Terminal Zones at Station

This is a proposed crossover just south of the Pleasant Hill station. There is a potential flat area (at grade) parallel to I-680 and Buskirk Avenue/Jones Road just before the final curve before crossing Treat Blvd. and the final approach into Pleasant Hill station. Currently, there are no interlocking or terminal zones. To short-turn trains, trains now have to travel to the Concord yard to be turned back and placed in revenue service. For making and breaking cars, trains have to travel all the way to Pittsburg-Bay Point.

With an interlocking close to the station and terminal zones at the platform, trains can be turned back more rapidly to increase supply of revenue service trains serving central Contra Costa stations in the AM peak inbound direction. Allowing trains to short-turn at Pleasant Hill can reduce peak period car requirements by between 10 to 20 cars (based on current train schedule) while allowing increases in trips.

Allowing trains to turn at Pleasant Hill would also reduce headways for the inbound direction stations and reduce wait time for passengers. It also increases seating capacity for Lafayette, Orinda, and Rockridge passengers which experience frequent crowded trains during AM peak by the time it gets to their respective stations. It also allows single-track operations in 15-minute headways on weekends and off-peak periods and increase service frequency for riders.

The Pleasant Hill Station crossover can be used as a make/break location to better size trains for trips during the peak to match the loading profile(s) along the line. Smaller trains can be turned back in the peak direction while the rest can be sent to the Concord yard or to Pittsburg-Bay Point. Likewise, shorter trains coming out of the Concord yard or Pittsburg-Bay Point can join up to make longer trains (if needed) at Pleasant Hill to satisfy peak period demand. This strategy helps to reduce total car hours and car miles on the C-line.

C-Line Crossover West of Pittsburg-Bay Point Station with Terminal Zones at Station

This is a proposed crossover immediately west of the Pittsburg-Bay Point station with terminal zones at the station. Currently, trains arriving at Bay Point cannot be turned back at the station platform. Instead, they are sent to the pocket tracks behind the station for turn back or to make or break trains. Train control modifications are necessary to allow trains to reverse at the platform.

The proposed crossover would increase operational flexibility by allowing trains to be turned at the station platform instead of going all the way to the pocket tracks.

A crossover would allow single-track operations with 15-minute headways on weekends and off-peak period. This would increase weekend and off-peak train frequency by directly benefiting riders.

R-Line Crossover South of Richmond Station with Terminal Zones at Station

This project proposes a crossover just south of the Richmond station. Currently, there are no interlocking or terminal zones for turning trains at Richmond station. Trains have to travel to the yard to be turned back and placed into revenue service.

A crossover near the Richmond station would allow trains to be turned more rapidly at the station platform. It would prevent the need for trains to travel all the way to the Richmond yard in order to be turned back the other direction for revenue service. This strategy would reduce AM peak car requirements by 6 to 20 cars. It would also increase operational flexibility by allowing the making or breaking of cars without traveling to the yard.

Intrusion Detection System

This project would install an intrusion detection system on portions of the L-line bordering I-580. This system would notify central control, if a vehicle intrusion occurs on BART's right-of-way.

Right-of-Way Barrier Improvements

The District has identified a need to improve the barrier separating BART right-of-way from I-580 on portions of the L-line. Experience has shown a higher number of motor vehicle intrusions into BART right-of-way than on other similar corridors. Such intrusions have the potential to affect the safety of operations.

Other Mainline System Capacity Capital Needs

As the *System Capacity Study* progresses, capacity-increasing mainline projects may surface.

Stations

BART is committed to maintaining and improving the quality of its stations and station areas. There are four main areas of concern with respect to any given station. Those areas are Station Access, Station Capacity, Station Area Planning, and Station Area Joint Development. Each division within BART involved in station improvement is working towards development of criteria for deciding which projects and stations receive prioritization.

Access and Capacity

Staff has been working with the Board to develop an Access Management and Improvement Policy Framework. This policy framework, which outlines the District's approach to access planning and implementation directs staff to prioritize the most critical access constrained stations and to develop programs at BART stations to meet passenger and community needs. BART is committed to improving access to BART stations, both to better serve existing passengers and to stimulate additional ridership. To this end, BART partners closely with other transportation providers in the region to facilitate access. Pedestrian and bicycle access have increasingly become focal points in BART's access planning. Parking, too, has risen as an issue that bears significant review and analysis and potential investment. BART is continuing to address the accessibility needs of the disabled community as well. This *CIP* includes many projects which are designed to facilitate the availability of BART for all travelers who walk, bike, use other transit modes or drive.

BART's concern over capacity issues has grown with the recent rapid increase in ridership numbers. To better define and address BART's capacity constraints, a System Capacity Study is currently underway. This study will define station capacity needs and prioritize stations where capacity improvements need to occur. Some projects that effect capacity at stations are already identified and included in this *CIP*. For both Station Access and Station Capacity, some projects are developed on a systemwide basis, while others are developed specifically for an individual station. Because of this, some projects are listed separately under Systemwide Track One and Track Two Projects and Station-Specific Track One and Track Two Projects.

Planning and Joint Development

An important strategy for supporting station area improvements is to promote land uses and development patterns that are physically and functionally linked to transit. For this reason, BART is making a strong effort to increase its involvement in community-based planning efforts and transit-oriented development activities. Transit oriented development has been an important program at BART for a number of years. The Joint Development Division in the Real Estate Department focuses on projects with a significant potential for private sector participation. As an addition to BART's existing Joint Development Division in the Real Estate Department, BART created a new Station Area Planning Division of its Planning, Research & Development Department last year. BART's

Station Area Planning Division places a priority on working with communities and agencies that have adopted policies supporting station area development (particularly transit-oriented development), secured a local funding match or in-kind commitment to develop a station area plan, and prepared a community outreach process to help develop the plan. Consistent with the Strategic Plan, Station Area Planning staff also acts as a resource for communities working toward any of these objectives. The concerted effort of both the Station Area Planning Division and the Joint Development is to focus on land use planning and development around BART stations.

For the purposes of this CIP, planning and development activities at a particular station may be separated between Station-Specific Track One Projects and Station-Specific Track Two Projects. For example, if a station has a funded station planning process or study underway, a description of that process or study can be found in the Station-Specific Track One Projects section. If the station area project or development that is the result of a planning process does not currently have an identified funding source, then that project or development can be found in the Station-Specific Track Two Projects section.

Systemwide Track One Projects

ADA Key Station Parking Modifications

This project is providing mandated accessibility modifications to stations. This is designed to improve the accessibility of the existing stations for disabled persons by meeting standards for accessible car and van parking. The project is needed to comply with ADA requirements and to improve passenger comfort and convenience.

Automatic Fare Collection Equipment Capacity Expansion

The station capacity study indicated the need for additional automatic fare collection (AFC) equipment at many core stations. The need for additional equipment will be further exacerbated by basic underlying patronage growth, by the addition of new destinations due to the BART extensions program, and by the complexities of credit card and “smart card” features being added to the ticket vending machines. This project addresses these needs through a plan to add AFC equipment to those stations that require additional equipment capacity. For planning purposes, the project includes the following additional quantities: 80 ticket vending machines, 40 addfare machines and 100 gate consoles. All vault preparation, cabling, installation, manuals, training, project management, DAS changes and parts complements are included. Major stations modifications or rearrangements may be required to implement this project. There is an additional project description for this program under Systemwide Track Two Projects and, as projects are developed at individual stations, there may be listings under Station Specific Track One and Track Two Projects.

Bicycle Access Program

This program would improve bicycle access to BART by providing bicycle lockers and other bicycle parking facilities at BART stations. Projects that have been funded include bicycle lockers at the Orinda and Walnut Creek stations, attended bicycle parking facilities at the Embarcadero and Fruitvale stations (the latter facility is described below under the Fruitvale Transit Village project), and the replacement of outmoded post-and-chain bicycle racks with more secure, higher capacity wave racks. Amenities and services that might be offered by the attended bicycle parking facilities include bicycle accessory sales, bicycle rentals, transit information, and community hosted activities such as bicycle safety and maintenance workshops. BART's first attended bicycle parking facility, located at the Downtown Berkeley station, was recently completed and is now in operation.

BART has been pursuing funding for the continuation of its Bicycle Access Program. Transportation for Clean Air grant funds will continue to be pursued to expand opportunities for bicycle access to the system. There is an additional project description for this program under Systemwide Track Two Projects and, as projects are developed at individual stations, there may be listings under Station Specific Track One and Track Two Projects.

"CarLink" Station Cars

BART has been developing the station car concept for seven years. Station cars are automobiles that are used by several BART riders per day to give them access and egress to and from stations. Initially the focus was on electric vehicle technology. BART conducted a two and a half year program using forty electric vehicles imported from PIVCO (Personal Independent Vehicle Company) of Norway. A major conclusion of the program was that the sharing of cars was as environmentally important as the vehicle technology. "CarLink," a new car sharing/station car program, was launched in February 1999 at BART's Dublin/Pleasanton Station using twelve compressed natural gas cars from Honda. Soon BART will have station car services provided by rental car companies, using gasoline cars. One BART customer will drive the car from home to the station. Another BART customer will drive the car from the station to the work site. At the work site the car will be used as a corporate pool car. With revenue coming in from each of the several daily users, the station car market would become a major new opportunity for the rental car industry, as well as a mode for enhanced access to transit.

Intermodal Access Program / Transit Centers

This project will construct transit centers at the Coliseum/Oakland Airport, El Cerrito Plaza, Fremont, Fruitvale, South Hayward, Union City and West Oakland BART stations. BART will design and construct bus berth transit centers with benches, bus shelters, signage improvements and other amenities. These projects, once completed, will improve traffic circulation in the vicinity of the stations, and improve the passenger experience by providing upgraded bus waiting and loading areas, weather protection and other amenities. Transit Centers have already been constructed at Bayfair, Hayward, Walnut Creek, Concord, Pittsburg (park/ride facility), and Daly City.

BART and AC Transit have entered into a Memorandum of Understanding the terms of which allow AC Transit to pass through to BART federal funds and local match for construction of intermodal transit center improvements at eight stations. There is an additional project description for this access program under Systemwide Track Two Projects. As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Joint Development Positions

This project funds two capital positions and related costs to facilitate joint development at BART stations.

Bathroom Barrier Removal/Access Improvement

This project is currently underway and will remove blocks to accessibility from all bathrooms systemwide. The removal of these barriers will bring the bathrooms up to current American with Disability Act requirements.

Pathfinder Sign Program Prototype

The BART Pathfinder Sign Program is a comprehensive sign and brochure/map program to enable BART customers, particularly pedestrians and bicyclists, to easily find their way to BART stations and out to local destinations.

A combination of BART and grant funds are supporting prototype development and initial deployment of this program. There is an additional project description for this program under Systemwide Track Two Projects and, as projects are developed at individual stations, there may be listings under Station Specific Track One and Track Two Projects.

Stations Security Program

Stations in downtown San Francisco, Oakland and Berkeley have experienced increased vandalism and misuse over the past few years. This misuse includes the problem of urination in BART elevators and on escalators, the primary complaint of the disabled community in a recently settled lawsuit with the District. Large multi-level downtown stations are very difficult to police for this type of activity, particularly during late evenings and after revenue service.

This project will replace the present video surveillance system and will protect street to concourse escalators from environmental and vandalism damage during non-operational hours by constructing canopies over escalators and elevators. The existing cameras are very limited and do not provide the detailed images necessary for prosecution. They also are very limited in number and do not cover areas that have proven to be susceptible to vandalism and other illegal activities. Entrance security barriers would be added to reduce the vandalism and misuse that occurs during non-revenue hours. Lighting improvements will be added in those areas that are known to have security problems and cameras will be added for additional surveillance. All video surveillance will be transmitted to BART police at both their line offices and Lake Merritt Headquarters.

System Access Planning and Monitoring

The District wants to maintain and update the System Access Evaluation System on a regular quarterly basis and expand its capabilities to assess current and future access and capacity conditions at all stations.

Systemwide Track Two Projects

Accessible Parking and Path Improvements at Bay Fair, Castro Valley, Hayward, Pittsburg / Bay Point, Union City and West Oakland Stations

This project provides improvements to accessible parking, accessible path and drop-off, including signage, striping, paving and miscellaneous concrete work.

Automatic Fare Collection Equipment Expansion

Recent analysis of faregate capacity demonstrates a near-term need for adding about 100 faregates to the existing system. Faregate equipment quantities by station are based on a recent analysis using patronage forecasts, a patron flow model that estimates train offloads, and a faregate queuing model. Additional faregates (especially in downtown San Francisco), in conjunction with additional parking at suburban BART stations could provide an important ingredient in solutions to downtown San Francisco parking and traffic congestion problems. The faregate expansion project requires the purchase of equipment, preparation of sites for installation, and installation and testing. Corresponding ticket vendors and addfare machines would complement faregate additions in order to efficiently utilize the investment in the new AFC equipment. Both faregate and ticket vendor/addfare expansion projects would require architectural modifications. There is an additional project description for this expansion program under Systemwide Track One Projects. As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Bicycle Access and Safety Program

This program would improve bicycle access to BART by providing bicycle lockers and other bicycle parking facilities beyond those described in the Systemwide Track One Bicycle Access Program. Proposed for the Track Two Bicycle Access Program are an attended bicycle parking facility at the Pleasant Hill station, as well as a two phase Attended Bicycle Parking Evaluation Project and Plan. Phase one would provide a comprehensive evaluation of the existing attended bicycle parking facilities, including recommendations on the continued operations of existing facilities, the need for any modifications and recommendations for other locations. Phase two would provide specific implementation guidance, including a business plan and financing and program management strategies.

Also included in the Track Two Bicycle Access Program is the construction of System-wide Covered Bicycle Parking. This project is to construct covered bicycle parking facilities at 20 stations, including various safety amenities. In addition, the System Safety Department has evaluated the installation and materials of the existing bicycle lockers system wide and in 1999 developed a three tiered priority list for corrective actions to address safety issues. The 1st year will replace and relocate, as needed, 80 lockers from very high priority safety locations. The 2nd year will replace and relocate, as needed, 250 lockers from high priority safety locations. The 3rd year will replace and relocate, as needed, 48 lockers from intermediate priority safety locations and upgrade and relocate, as needed, 178 lockers from the low priority safety locations.

As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Braille Directional Signage at Extension and Non-Key Stations

This project provides improvements to Braille signage that directs passengers with disabilities to the most appropriate path to the various transit and user related amenities at each station.

Future System Access Planning and Monitoring

The District wants to maintain and update the System Access Evaluation System on a regular quarterly basis and expand its capabilities to assess current and future access and capacity conditions at all stations.

Installation of "Hands Free" Emergency Telephones in Station Elevators

The replacement of emergency telephones in all station elevators throughout the BART District with "Hands Free" emergency phones is needed in order to upgrade existing communications between BART Police and passengers in distress, including those with limited use of their arms. A total of 76 elevators will be modified.

Intermodal Access Program / Transit Centers

This program will improve intermodal access at BART stations. Projects developed under this program may include bus berths, benches, bus shelters, signage improvements and other amenities. This program may also include improved transfers between BART and other transit systems. The intent of these projects is to improve traffic circulation in the vicinity of the stations and facilitate access to BART stations. There is an additional project description for this access program under Systemwide Track One Projects. As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Parking Access Program

BART continues to address automobile parking related access issues. As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Parking System Equipment Procurement and Installation

This project would acquire and install parking monitoring equipment at selected stations.

Pathfinder Sign Program

The BART Pathfinder Sign Program is a comprehensive sign and brochure/map program to enable BART customers, particularly pedestrians and bicyclists, to easily find their way to BART stations and out to local destinations. There is an additional project description for this program under Systemwide Track One Projects and, as projects are developed at individual stations, there may be listings under Station Specific Track One and Track Two Projects.

Pedestrian Access Program

Pedestrian circulation at or around stations is an access concern for BART. As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Real Time Travel Information

One way to improve service to BART customers is to provide real time concourse and street level information regarding the approach of BART trains. Such information would enable BART passengers to make informed decisions regarding the use of concessions and whether to add value to their tickets as they begin or complete their trips.

Station Egress and Vertical Circulation Improvements

The need for vertical circulation capacity in stations (stairs and escalators) is determined largely by the number of passengers disembarking trains during peak periods. This is because the rate at which station platforms are filled is much greater from a crowded train unloading, than from the more continuous flow of passengers entering the station. This is particularly true in regard to needs for rapid station evacuation in the event of an emergency. This program of station egress improvements will provide for the required emergency egress capacity, while also improving vertical circulation for day-to-day station operations wherever possible.

Passenger flow in BART stations can be improved by making modifications to existing or by installing additional stairs or escalators. As projects are developed at individual stations, they may be listed separately under Station-Specific Track One or Track Two Projects.

Systemwide Accessible Directional Signage

This project provides improvements to signage that directs passengers with disabilities to the paths to various station amenities.

Systemwide Accessible Drop-off / Intermodal Improvements

This project provides improvements to drop-offs and other related bus intermodal accessible elements including signage, painting, paving and miscellaneous concrete work.

Systemwide Other Accessibility Improvements

The objective of this project is to provide accessible improvements to stations throughout the BART system. The project includes the following components: accessible parking improvements, accessible path improvements, additional Braille directional signage, and enhancements to existing accessible path directional/informational signage.

Talking Signs Program

This project would provide tested and proven "wayfinding" system for people who are "print" disabled, blind, or visually impaired, including cognitively impaired, "talking sign" in all BART stations. The District jointly with MUNI tested "talking sign" at the Powell Street Station and jointly with AC Transit at the Fremont Station intermodal bus transfer. Talking sign uses infrared transmission to provide an audio description of station features to people using a hand-held receiver.

Other Stations System Capacity Capital Needs

As the *System Capacity Study* progresses, capacity-increasing station projects may surface.

Station-Specific Track One Projects

16th Street Mission Station Southwest Plaza Community Design Plan Implementation

The two plazas above the 16th Street Mission station function as entryways to the station and as important transfer centers for passengers connecting between BART and Muni. Over the years, however, the plazas have become a source of neighborhood concern over such issues as safety, aesthetics and public amenities. In response to this concern, BART and the Metropolitan Transportation Commission (MTC) sponsored a series of community workshops focused on the two 16th Street Mission plazas and led by Urban Ecology and the Mission Housing Development Corporation (MHDC), a non-profit developer of affordable housing. The product of these workshops is the 16th Street BART Community Design Plan, which establishes a blueprint for creating a safer and more active and vibrant public space at the 16th Street Mission Station.

This first phase of implementation of the Community Design Plan has been funded and will focus on the reconstruction of the southwest plaza. This project will improve the safety and usability of the plaza through enhancements such as lighting, paving, landscaping, benches, and the removal of current barriers to pedestrian circulation and visibility. Partners in the implementation phase of the project include the San Francisco Department of Public Works (DPW) and MHDC. This project will also include new amenities for transit passengers, such as new and enlarged bus shelters and escalator covers to improve reliability. The $1.96 million project is funded with $1.7 million from MTC's Transportation for Livable Communities (TLC) Capital Program and $130,000 each from BART and DPW.

24th Street Mission Station Area Plan

Like the plazas at the 16th Street/Mission station, the two plazas above the 24th Street/Mission station function as gateways to the station and as major transfer centers for passengers connecting between BART and Muni. Over the years, however, the plazas have become a source of community concern over such issues as security, aesthetics, and public amenity. BART, in partnership with MTC, the Mission District community and the City of San Francisco, is focusing on the development of a design plan for the plazas at the 24th Street Mission station. In addition to addressing concerns raised by the community, this plan will ensure that common elements on the plazas of both the 16th Street Mission and 24th Street Mission BART stations are developed in a consistent manner, helping to establish a strong identity for the Mission Street corridor, and reducing overall design costs. The project is funded with $35,000 from MTC's TLC Planning Program, $15,000 from BART, and $24,000 worth of staff support from the San Francisco Department of City Planning.

Ashby Station/Ed Roberts Campus Planning Project

BART and the City of Berkeley have conditionally approved development of the Ed Roberts Campus at the Ashby Station. The proposed project would consolidate services for people with disabilities in a center adjacent to the east side of the station. By consolidating services at a BART station, the Ed Roberts Campus will provide easier access to such services both from the BART system and from buses that serve the station. The project is being pursued by a consortium of nine organizations serving people with disabilities, also known as the Ed Roberts Campus. Through funding provided by MTC, the Ed Roberts Campus is conducting a conceptual design study and environmental assessment for the proposed project. The project is funded with $500,000 from the federal Transportation and Community and System Preservation (TCSP) Pilot Program, $100,000 from MTC's TLC Planning Program, $60,000 from the City of Berkeley, and $25,000 from BART.

Balboa Park Station BART/Muni Pedestrian Access and Accessibility Improvements

The San Francisco Department of City Planning has identified various transit corridors throughout the City as candidates for the development of infill housing. Most of these are along Muni light rail lines or the BART line. Recently, the Planning Department has focused its attention on the area around the Balboa Park BART station because it has great potential for new development given the amount of developable land in the area owned by public agencies (Muni, City College of San Francisco, the Department of Public Works, and BART). The San Francisco Planning Department is working with these agencies and BART on a study focused on strategies to encourage the development of infill, transit-oriented housing and to improve pedestrian access to the BART station and Muni light rail stops.

A new pedestrian pathway between the BART station entrance and Ocean Avenue is planned to improve intermodal and station access between BART and Muni and to increase pedestrian safety. Currently, passengers of both systems encroach on the Muni right-of-way as a shortcut between the station and destinations, such as

City College, that are located on and beyond Ocean Avenue. The project will provide a safe and continuous route to Ocean Avenue by reconstructing and extending the walkway situated between the Balboa Park BART station and the Muni right-of-way. The project scope includes providing directional signage, installing a railing and additional lighting for safety, and landscaping in order to make the walkway more appealing to pedestrians. The project is funded with $628,000 in federal money awarded by the San Francisco County Transportation Authority and $82,000 from BART.

Balboa Park Station Expansion Study

BART will be studying potential expansion opportunities at the Balboa Park Station. Issues that the study will assess include ridership, passenger flow, a potential new Ocean Avenue entrance, intermodal access and potential joint development around the station.

BART-SFO Colma-Millbrae Bikeway and Other Daly City Station Improvements

In 1996, BART and SamTrans agreed to share the responsibility for construction of a bicycle project along the BART-SFO Extension alignment. Understanding that it may not be possible to construct a trail contiguous with the alignment right-of-way, a study was launched earlier this year to evaluate alignment alternatives and overall project costs. SamTrans is funding the study. Upon completion of the study, the project will undergo preliminary engineering, environmental clearances, design and then construction. The trail is targeted to open in late 2002.

BART and SamTrans have each committed up to $1 million for construction of the bikeway. Costs, if any, beyond $2 million are the responsibility of SamTrans. The San Mateo County Congestion Management Agency has committed to allocating $2 million of STIP funds to BART for these improvements within San Mateo County. The STIP funds will be used to fund BART's $1 million portion of the bicycle trail costs, as well as other improvements at the Daly City Station.

Bayfair Station Access and Station Area Improvements

Alameda County, in concert with the City of San Leandro and BART, has secured funds to improve the pedestrian connection between the Bayfair Shopping Mall, a planned cineplex, the Bayfair BART Station, and East 14th Street. The County, the City, and BART, together with the Mall management, have already participated in a preliminary design study that resulted in the development of cost estimates for the project. The project is funded with $2 million in federal money awarded by the Alameda County Congestion Management Agency and $260,000 from Alameda County.

Coliseum Station Accessibility Improvements

Coliseum Accessibility Improvements will bring the Coliseum Station into ADA compliance within the time limits imposed by the Cupolo Class Action settlement Agreement and the FTA Voluntary Compliance Agreement (VCA). These improvements consist of bringing the existing five accessible parking spaces up to ADA standards, adding fifteen more accessible parking spaces to bring the total up to twenty as required, improving all necessary accessible pathways to the station, and adding wheelchair access through the tunnel by means of two chair lifts.

This work was originally scheduled to be done in conjunction with the AC Transit Intermodal work, but that project was put on hold pending other developments at this station. Because of Cupolo and VCA, the accessibility work must be finished before May of 2001. The project is funded with $760,000 from BART.

Concord Station Access and Station Area Improvements

In 1998, MTC, the City of Concord, BART, and JFK University engaged in a planning study focused on improving pedestrian access to the station, as well as the pedestrian connection between the Concord BART Station and both a proposed JFK University campus and downtown Concord. The first phase of implementation of the plan has been funded by MTC and the City. The project will extend the City's downtown streetscapes to BART's entry and will implement other design improvements that will enhance the pedestrian connection between BART and downtown Concord. Once JFK secures its construction funds, a second phase would be pursued to facilitate pedestrian connections between BART and the JFK University campus.

The first phase consists of a) installing streetscape improvements on Grant Street (BART-owned portion) all the way to the station entrance based on the City's downtown streetscape program, b) creating a pedestrian plaza in front of the station, c) installing improved lighting, d) installing several directional kiosks, and e) removing an access road in the BART parking lot that created an auto and pedestrian circulation conflict at the station entry. This project is expected to start construction in early spring 2001 and to be completed within three months. The $802,000 project is funded with $500,000 from MTC's TLC Capital Program, $65,000 in State Transportation Improvement Program (STIP) funds awarded to the City, and $237,000 from the City's Streetscape Fund.

Dublin/Pleasanton Station Access and Transit Village

The first phase of this project calls for a 400-space expansion of the existing surface parking lot at the Dublin/Pleasanton Station by Alameda County. The second phase of the project calls for Alameda County to secure sufficient funds to construct a parking structure immediately northeast of the station adjacent to the freeway. BART's current 7-acres of surface parking and up to an additional 500 spaces would then be shifted into the parking structure, freeing up the land in front of the station for private development. Alameda County has begun the environmental review with the City of Dublin and, subject to CEQA approval, will secure a private developer(s) to construct the mixed-use Transit-Oriented development, following completion of the parking structure. The project is funded with $6 million in federal money, half of which was awarded to BART and half of which was awarded to Alameda County. The local share of $777,000 is being provided by the County.

El Cerrito del Norte Station Accessible Parking, Path Improvements and Station Area Development

This project provides improvements to accessible parking and the accessible path and drop-off area, including signage, striping, paving and miscellaneous concrete work. BART is in an Exclusive Negotiation Agreement with Pacific Valley Housing. The developer is proposing a mixed-use project at the El Cerrito del Norte station area.

El Cerrito Plaza Station Access and Station Area Improvement

Contra Costa County Measure C provides $5.5 million in funding for BART passenger parking expansion at the El Cerrito Plaza Station. BART and the City are currently cooperating to determine the exact nature of this project. The scope, cost and schedule of this project will be finalized upon completion of that effort.

Fruitvale Station Transit Village (Childcare Facility, Pedestrian Plaza, and Parking Structure)

BART is working with the Fruitvale Development Corporation (FDC) of the Unity Council (formerly the Spanish Speaking Unity Council) on three components of the planned Fruitvale Transit Village: a pedestrian plaza, a childcare facility, an attended bicycle parking facility, and a car parking structure necessary to free up land for the Transit Village development. The plaza will consist of a 30,000 square foot public, landscaped "paseo" located on the east side of the station. It will provide a pedestrian corridor between the station and International Boulevard, Fruitvale's existing commercial corridor, which is lined with storefronts and has a great deal of pedestrian activity. Surrounding the plaza site, the FDC will construct a transit-oriented project that will feature housing, offices, retail and community facilities and services, including the childcare facility, a community resource center, a medical clinic, a latin american public library, an adult day-care facility and a senior center.

The childcare facility will accommodate approximately 200 children and will enhance and encourage the use of public transit at the Fruitvale Station by providing a service to passengers of both BART and AC Transit and the local community. In order to free up land to accommodate the Transit Village, a parking structure will be constructed on the west side of the station, and additional surface parking spaces will be added to the south side of the station. Together, they will provide enough parking to replace the surface spaces that will be lost when the Transit Village is developed on the east side. An attended bicycle parking facility will also be included as part of the Fruitvale Station and will accommodate 236 bicycles. As a whole, the Transit Village will visually enhance the Fruitvale Station; provide transit-accessible jobs, services, and housing; and improve pedestrian access to BART and AC Transit, thereby stimulating additional ridership, including off-peak passengers and reverse-commuters. The Pedestrian Plaza is funded with $780,000 in federal Transportation Enhancement Activities (TEA) funds and an in-kind contribution from BART of land valued at $375,000 plus staff time worth $75,000. Funds for the childcare facility come from a $2.3 million grant from FTA and a $575,000 contribution from the Unity Council.

Finally, the replacement parking project will be built using $7.65 million in STIP funds.

Glen Park Station Accessibility Improvements

This project will create an accessible route from the station parking lot to the station entrance and will reconfigure and improve accessible parking and the accessible drop-off area to better meet ADA guidelines. The Glen Park Station, although not a key station and therefore not legally required to meet ADA guidelines, would be made accessible according to ADA standards. Currently, the path of travel to the station is primarily on San Francisco city streets, so BART would work cooperatively with the City on the project. The project is funded with $181,000 in federal money awarded by the San Francisco County Transportation Authority and $24,000 from BART.

Hayward Station Area Development

The City of Hayward and BART have negotiated a land swap to facilitate the construction of housing near the station, as a supplement to previous station area development.

Lafayette Station Access and Station Area Improvements

During the past few years, the City of Lafayette has worked with developers on plans for the Lafayette Town Center, a $30 million transit village project just south of the Lafayette BART Station that will include retail, 75 apartments and an office building. The new development will be entirely accessible to people with disabilities, and the City will require the developer to provide facilities beyond those stipulated by current law, including elevator access to each floor of the apartment units and "chirping" pedestrian signals. However, the southern entry to the Lafayette BART station is not accessible to people with disabilities. The proposed access project, to be sponsored by the City in partnership with BART, calls for the construction of a wheelchair-accessible ramp and a pathway leading from the south side of the BART station to the Town Center. Within the Town Center, a wheelchair-accessible walkway will provide a public right-of-way leading to Mt. Diablo Boulevard, Lafayette's main commercial thoroughfare. The project is funded with $300,000 in federal money awarded by the Contra Costa Transportation Authority and $425,000 to be split between BART and the City.

MacArthur Station Elevator Replacement

The two elevators in the MacArthur Station are difficult to access for people with disabilities. These people have to cross a busy roadway to reach the station elevators from the station agent's booth and faregates. Also, being remote from the Station Agent, these units are vandalized frequently and are often out of service as a result. These elevators are also susceptible to fare evaders. This project will install new elevators to both platforms within the paid area of the station near the agent's booth. The $1.96 million project is funded with $1.43 million from MTC's TLC Capital Program and $391,000 from BART, and $140,000 in Bridge Toll funds.

MacArthur Station Area Development

Jones Lang LaSalle (LaSalle) was selected by Health South as their developer to expand the Surgery Center located on Telegraph Avenue adjacent to BART's parking lot at the MacArthur Station in Oakland. At LaSalle's request, BART has granted exclusive negotiating rights to LaSalle to expand the Surgery Center over BART's parking lot. The community, City, BART and LaSalle are collaboratively pursuing implementation of the expansion in keeping with the community's vision of development at the MacArthur Station. That community vision was given greater form as the result of a six year collaborative planning process, which began in 1993, between the City of Oakland, BART and a Citizens' Planning Committee.

Oakland Coliseum Station Area Plan

BART is working with multiple partners on the development of a plan to create a multi-modal transportation hub to facilitate transfers and pedestrian access for users of BART, AC Transit, the current AirBART shuttle bus service to the Oakland International Airport, the proposed BART/Oakland Airport Connector, the planned Capitol Corridor rail service, the Oakland Coliseum Complex, and the surrounding commercial and residential development. The project would include improvements to the pedestrian bridge which links BART, the Coliseum, and the planned Capitol Corridor rail stop; increased pedestrian access to the BART station; bus intermodal improvements; more efficient passenger circulation on escalators and platforms; and security improvements. Partners in the planning phase include the City of Oakland Community and Economic Development Administration, AC Transit, the Capitol Corridor Joint Powers Authority, the Port of Oakland, the Elmhurst Community Development District Board, and the Coliseum Commerce Corporation Advisory Committee. The project is funded by the City, BART, and the Port of Oakland. The project is funded with $45,000 from the City and $40,000 from BART.

Oakland 12th Street Station - Ogawa Plaza Project

BART and the City of Oakland entered into the agreement for reconstruction of the BART entrance at Ogawa Plaza in April 1997. Under the agreement, BART and the City agreed to contribute $275,000 each as local match for a State Transit Capital Improvement grant in the amount of $2,108,000 and the City agreed to replace or rehabilitate the BART escalator at the Ogawa Plaza station entrance. The TCI grant was awarded to the City as project sponsor.

When this project was advertised by the City, the low bid exceeded the project budget. To stay within the budget, the City reduced the project scope and readvertised the project. Additionally, BART and the City executed an amendment to the agreement in October 1999 where BART has agreed to include the rehabilitation of the escalator in BART's Escalator Rehabilitation Program. The City has agreed to reimburse BART for the additional design and escalator rehabilitation costs up to a total amount of $321,026.

Pittsburg/Bay Point Station Parking Structure

This project would build a 1500 space, multi-story parking structure at the Pittsburg/Bay Point BART Station. The parking structure is in the station area

Specific Plan, which is currently undergoing a CEQA process (full EIR). BART expects that the City of Pittsburg and Contra Costa County will certify the EIR within the next 6-8 months. The specific plan includes higher commercial density following transit-oriented development guidelines created by BART, Contra Costa County and the City of Pittsburg. Consolidating surface parking into this structure is the way to maximize transit ridership. The lack of available parking forces many potential passengers to drive. Structured parking will allow for much more dense development, on BART's property in the future, encouraging new residents and employees to walk and ride BART. The project is funded with $1.25 million in federal money awarded by the Contra Costa Transportation Authority and $162,000 from BART.

Pleasant Hill Station Access and Station Area Improvements

BART is in an exclusive negotiating agreement with Millenium Partners for a joint development project to be located on the current site of surface parking at the Pleasant Hill BART Station. Before developing the site, Millenium Partners will build a structure to accommodate replacement parking. This project is in conformance with the Specific Plan for the station, which allows retail, commercial and/or high-density residential uses within convenient walking distance of BART and the numerous bus lines converging at the station. The Plan, including amendments, were adopted in conjunction with the approval of the Plan's EIR in 1998. This transit-oriented development will improve pedestrian and bicycle access, provide increased convenience for local residents and BART riders, and enhance the viability of "reverse" commuting to jobs in the station area. The garage will accommodate the planned development by freeing up surface lots, while ensuring spaces for commuters who park at BART.

Powell Station Tunnel to Yerba Buena Gardens

BART is negotiating an agreement with Millennium Partners and the San Francisco Redevelopment Agency (RDA) to open the currently closed 210 foot pedestrian tunnel at the far east end of the Powell Street Station mezzanine. The tunnel was originally constructed in the early 1980's with funds obtained by the RDA. This unused mezzanine extension will allow patrons to connect to a Four Seasons Hotel, a new plaza on Market Street, and a retail oriented pedestrian promenade (Yerba Buena Way) that will go from Market Street to Yerba Buena Gardens, the Metreon and Moscone Center. The project will be funded by Millenium Partners.

Richmond Station Access and Station Area Improvements

Funded by MTC and the State Transportation Improvement Program, this project will focus on enhancing pedestrian access to the station, as well as connecting the Richmond BART Station to both the planned Richmond Transit Village and Downtown. The access improvements include a major intermodal transfer facility linking Amtrak, BART and local bus service, a new transit station building, a center Amtrak platform, a new elevator and a raising of Nevin Avenue Walkway. In its proposed location adjacent to the BART Station, the Richmond Transit Village will be a compact, mixed-use development covering 16 acres that includes housing, retail, and a regional performing arts center. The project is funded with $3 million in STIP money awarded to the City and $750,000 from MTC's TLC Capital Program.

Richmond Station Transit Village

The City of Richmond and BART have entered into exclusive negotiations with the Olson Company to design and construct the Richmond Transit Village. The project consists of approximately 220 for-sale residential units, a 30,000 square foot cultural arts facility, approximately 20,000 square feet of retail, a 4-5 level parking structure and all of the intermodal transit improvements cited above under "Richmond Access and Station Improvements." The non-intermodal transit-oriented improvements are subject to environmental review under CEQA and final approval by BART and the City.

San Francisco Stations - Muni Fast Pass Turnstiles

San Francisco BART stations have become extremely congested during peak hours, creating not only inconveniently long lines but also safety hazards for customers (when lines back up onto escalators). Congestion problems at the eight BART/MUNI stations (from Embarcadero to Balboa Park) could be addressed by installing approximately 26 exit-only turnstiles to process Muni Fast Passes, since many San Francisco BART riders use this fare instrument. The project has three principle benefits:

- Allows for accurate counts of Fast Pass passengers
- Allows Fast Pass passengers to leave stations much more quickly
- Reduces lines at existing faregates

The project is funded with $747,000 in federal money awarded by the San Francisco County Transportation Authority and $97,000 from BART.

San Francisco Stations – Market Street Stations Joint Development

Recently there has been private sector interest in improving the mezzanine levels of each of the four Market Street Stations. Additional retail/commercial development, as well as improved pedestrian access to and from the public transit services. BART is currently in the process of identifying one or more private entities who would be willing to work with the public agencies to first to assess the feasibility of improvements and then be responsible for their implementation.

San Leandro Station Area Plan

The City of San Leandro is working with BART, AC Transit and ABAG on a planning study focused on improving the pedestrian connection between the BART station and Downtown San Leandro, and on shifting the BART parking from the east to the west side of the station in order to allow housing to be built on BART property east of San Leandro Boulevard. BART is also working with San Leandro's General Plan Advisory Committee to ensure that these improvements are consistent with General Plan policy. The project is funded with $20,000 from MTC's TLC Planning Program and $35,000 from the City.

West Dublin / Pleasanton Infill Station and Transit Village

BART is working with Jones Lang LaSalle (LaSalle) on the development of a mixed-use project, which will include the West Dublin/Pleasanton BART Station in the median of I-580, the requisite ancillary transit facilities and private development on either side of the freeway. A complete description of the project can be found in this CIP under *System Expansion Program*.

West Oakland Station Area Plan

The area surrounding the West Oakland BART station has been the focus of much recent activity related to the provision of housing and transit access improvements. The Oakland Housing Authority (OHA) has received funding from the US Department of Housing and Urban Development to rebuild the Westwood housing development, which is across the street from the West Oakland BART Station, into an expanded mixed-use/mixed-income development. At the request of the OHA, BART and the City of Oakland and OHA have jointly funded a community-based planning study to assess additional development opportunity at and around the West Oakland BART Station and identify access improvements in the area around the station needed to promote housing development and transit usage. The project is funded with $30,000 from OHA, $40,000 from the City, and $25,000 from BART.

Station-Specific Track Two Projects

16th Street Mission Station Northeast Plaza Community Design Plan Implementation

This project is the second phase of implementation of the Community Design Plan for the 16th Street Mission BART Station, focusing on the northeast plaza. This project will improve the safety and usability of the plaza through enhancements such as lighting, paving, landscaping, benches, and the removal of current barriers to pedestrian circulation and visibility. Partners in the implementation phase of the project include the San Francisco Department of Public Works, MHDC and the Mission Economic Development Association. This project will also include new amenities for transit passengers, such as new and enlarged bus shelters and escalator covers to improve reliability.

24th Street Mission Station Area Plan Implementation

BART is working in partnership with MTC, the Mission District community and the City of San Francisco on the development of a design plan for the plazas at the 24th Street Mission station. This planning project is described above in the section on Station-Specific Track One Projects. Once the design plan is developed, the project partners will seek funds to implement the plan.

Ashby Station/Ed Roberts Campus Capital Project

BART is working in partnership with the City of Berkeley and a consortium of nine organizations on the development of the Ed Roberts Campus at the Ashby Station. The project is currently the subject of an environmental and planning study and is described above in the section on Station-Specific Track One Projects. Once the Ed

Roberts Campus has been certified for environmental compliance, the project partners will seek funds to complete the project design and construct the center.

Balboa Park BART Station Expansion Project

The Balboa Park BART Station is currently the fifth-busiest station in the BART system, and the busiest station outside downtown San Francisco. It is also Muni's major hub for southwest San Francisco, served by three Muni Metro light rail lines and seven bus and trolley coach lines, and home to Muni's light rail vehicle yards and repair facilities. The Balboa Park BART Station is the major transit point of entry to City College of San Francisco, serves the commercial districts on Ocean and San Jose avenues and Mission Street. With the opening of BART's extension to San Francisco International Airport and the intermodal BART/Caltrain station at Millbrae, Balboa Park Station will be a major gateway to the Airport and Silicon Valley.

Currently, the Balboa Park BART Station experiences some of the worst faregate congestion of any station in the BART system due to a limited number of faregates and only one entrance. This problem will be exacerbated when the San Francisco BART Airport Extension opens, and as BART intermodal connections to Caltrain at Millbrae induce even more reverse commute BART trips through the Balboa Park BART Station.

The San Francisco Planning Department has selected the Balboa Park BART Station area for its first Transit-Oriented Community Plan process, in which BART is a partner. The Balboa Park BART Station area was also identified by the San Francisco Planning Department as a priority area for new housing, because of its excellent transit connections and the presence of unbuilt or underutilized sites.

Although the Balboa Park BART Station platform extends from Geneva Avenue to Ocean Avenue, the station was designed with only one entry on Geneva Avenue. In addition, the station is one of the most access-constrained in the BART system, and needs a major expansion of both vertical circulation (stairways, escalators, and elevators), fare gates, and fare collection equipment.

Given the significant needs of this station, the Balboa Park BART Station Expansion Project is proposed for implementation in two distinct phases. Phase I will increase faregate capacity by reconfiguring the existing faregates at the concourse and adding additional faregates and additional ticket machines to meet current demand. Phase II improvements propose significant architectural and circulation modifications including the addition of a new station entry, stairway, escalator, elevator, station agent pod, additional faregates and fare collection equipment, and associated structural and relocation work. These improvements will expand needed passenger capacity, improve BART/Muni Intermodal connections, improve access between BART, the City College of San Francisco, and the Ocean Avenue commercial corridor, and serve as a catalyst for further neighborhood revitalization as envisioned in the community plan process.

Embarcadero Station Queuing Area Expansion

Congestion and escalator offload safety issues in Embarcadero Station can be alleviated by extending the floor area where queues form within the paid area. This can be accomplished by eliminating the open areas surrounding the escalators and stairways, thereby expanding the queuing space by 600 sq. ft.

Glen Park Station Second Entry

The Glen Park BART station area has identified significant circulation and pedestrian accessibility problems due to conflicts between vehicles entering and exiting the freeway, irregular and substandard interchanges and hilly terrain. There is only one entry point to the station, which compounds access problems and forces all station-bound pedestrians to cross busy streets (Bosworth, Diamond) even though the station and easements run under both streets. In addition, a new commercial development is proposed adjacent to the BART parking lot (across Bosworth from the station) which will attract more intensive pedestrian traffic.

This project would construct a new entry from the platform level to the existing BART parking lot across Bosworth utilizing an existing underground utility structure to provide a direct connection for passengers between the platform, the BART parking lot and the Glen Park neighborhood. Elevators, automatic fare equipment, a station agent booth, and security cameras would also be included in this entry. The proposed project would also provide direct access to westbound Muni buses.

North Berkeley Station Accessible Parking Improvement

This project provides improvements to accessible parking, accessible paths and drop-off areas at the North Berkeley station. The current configuration does not provide adequate access for the accessible community.

Oakland Coliseum Station Area Plan Implementation

BART is working with the City of Oakland and other partners on the development of a plan to create a multi-modal transportation hub at the Coliseum/Oakland Airport station. The planning effort is described above in the section on Station-Specific Track One Projects. Once the station area plan is developed, the project partners will seek funds to implement the plan.

San Leandro Station Area Plan Implementation

The City of San Leandro is working with BART, AC Transit and ABAG on a planning study focused on the area surrounding the San Leandro station. The planning effort is described above in the section on Station-Specific Track One. Once the plan is developed, the project partners will seek funds for plan implementation.

Union City Station Intermodal Hub

BART is planned to be a major rail intermodal hub: BART's transfer point to Santa Clara Valley Transportation Authority's (VTA's) proposed commuter rail (operating by 2004), the proposed Dumbarton Express commuter rail (at the same platform) and the Capitol Corridor service (with platforms 600+ feet to the east).

The explosion in job growth in Silicon Valley has led to severe traffic congestion in the East Bay. BART and other transit systems were not designed to serve this commuter load. The magnitude of intercounty trips now occurring is fast exceeding station capacity. Currently transit trips to Silicon Valley require several transfers from BART, including express bus service that must use the heavily-congested State Route 237 and I-880 corridors. At this proposed multi-modal rail hub, Union City would serve as BART's first rail intermodal gateway to Silicon Valley from the East Bay, offering a direct rail alternative to the highway congestion on the 237, I-880, I-580 and I-680 corridors

This project is being advanced in coordination with Santa Clara VTA. BART's proposal in developing this hub consists of two distinct but related components:

- a parking facility to increase parking supply at the intermodal station that will provide automobile commuters an alternative to the highly-congested freeway corridors leading to Silicon Valley
- an ADA-compliant pedestrian tunnel under the elevated BART tracks enabling commuter rail transfers to and from BART, VTA, Dumbarton Express, Capitol Corridor, and the AC Transit bus intermodal and walkway on the east side of the BART station

West Oakland Station Area Plan Implementation

BART, the City of Oakland and the Oakland Housing Authority have jointly funded a community-based planning study to assess development opportunity at and around the West Oakland BART Station and to identify access improvements in the area around the station needed to promote housing development and transit usage. The actions that led to this joint effort are described above in the section on Station-Specific Track One. Once the station area plan is developed, the project partners will seek funds for plan implementation.

Other Station Access and Station Area Improvements

As the District continues to work with local communities to develop station area plans, additional station access and station area improvement capital projects are likely to arise.

Controls & Communications

Track One Projects

Installation of Advanced Automatic Train Control System on Remainder of Core System – Phase IV

Presently the car-borne automatic train control system has specialized electronics required to detect track signals from the Westinghouse wayside train control equipment. The AATC system does not require these electronics. Consequently, the cost of car-borne ATC replacement can be minimized. The AATC system has one-third the components of the Westinghouse system and therefore will be significantly less costly to maintain. AATC will permit more accurate monitoring of train location, allow reduced run times and, thereby, increase the efficiency of the vehicle fleet. This project will install equipment from the Concord station on the Concord (C Line) and Richmond Station on the Richmond (R Line) through MacArthur Station on the Alameda Line (A Line)and between Bayfair and Fremont Stations on the Alameda Line (A Line).

The benefits of the project are multiple. The project will help BART to meet the increased demands on the system, as headway reductions become necessary in the future, as well as displace significant needs for train control renovation. The AATC system, when implemented on routes or significant portions of routes, will:

- enable BART to increase capacity or the number of trains that can be operated on equipped portions of routes from the current 18 to 20 trains per hour to 27 to 30 trains per hour
- improve service reliability
- allow BART to more effectively utilize its existing fleet
- provide energy cost savings

This AATC project will also provide critical improvements in core system capacity to anticipate potential extensions to Antioch, to Livermore and to Warm Springs/San Jose. In addition, this project includes the following subproject components:

Central Computer System Software Development to Support AATC

The current Central Computer System (CCS) software was developed with the constraints of the Westinghouse train control equipment and therefore has a limited ability to control the movement of the trains. In contrast, the AATC system exerts very fine control over train movement. AATC can also determine the location of trains on the BART mainline to within 30 feet. In order for the Operations Center to most effectively operate the AATC-based train control system, the CCS core train management logic and computer displays in the current CCS software must be restructured.

Installation of AATC Complementary Technology: Broken Rail and Silent Train Detection

The AATC system cannot detect vehicles that are "silent" to the AATC radio system. Additional development to the AATC system needs to occur to permit the detection of "silent" vehicles. Since AATC is a radio-based system, AATC cannot detect the condition of the rail. As AATC is presently being implemented, detection of these conditions will be provided by the track-circuit-based Westinghouse train detection system. The Westinghouse system is beyond its design life and needs replacing. In order to replace the Westinghouse train control system and allow AATC to become a stand-alone system, the AATC system needs to be augmented with silent train detection and broken rail detection.

Installation of AATC Complementary Technology: Program Stop

The automatic operation of berthing a train at a passenger station is called program stop. Presently the program stop is accomplished by coordination of the wayside Westinghouse train control system and the car-borne train control system. To fully replace the Westinghouse train control system, this function needs to be incorporated into the AATC system.

Replace and Add Second Communications Specialist Workstation in Central Control

As the new BART extensions become operational and the number of trains on-line increases, it is necessary to create a second communications workstation from which BART communications specialists in Central Control can make essential announcements about train movements, service disruptions, special conditions and other events that affect passengers.

Track Two Projects

Automatic Vehicle Identification Readers

This project, if implemented, will provide a reliable system for BART to maintain an account of all revenue vehicles on mainline and in the yards and other storage areas. The project will replace the existing partially-functional car identification system with new equipment, and will integrate the equipment into a BART-wide system.

The system will consist of car identification labels or tags applied on each car, car identification readers at trackside to read the tags as cars pass, communications to convey the information read to computers containing Car Accounting System software, and the Car Accounting System software itself.

Installation of AATC on Extensions – Phase V

Phase V will equip the PAX extension from Concord to Pittsburg/Bay Point, the DPX extension from Bayfair to Dublin/Pleasanton, and the SFOX extension between Daly City and Millbrae/SFO. This project extends the benefits of Phases

I-IV. This AATC project will also go further to increase the capacity of the BART system to support future expansion.

Other Controls & Communications System Capacity Capital Needs

As the *System Capacity Study* progresses, capacity-increasing controls & communications projects may surface.

Facilities

Track One Projects

Hayward Shop Lifts

This project, planned for outyear grant funding, would install two additional vehicle lifts, which will facilitate the removal of large under-car components, at the Hayward Shop, thereby increasing revenue vehicle maintenance capacity.

Train Operator Training Simulator

This first phase of the Track Two project funds a preliminary concept development effort pursued in conjunction with Chabot College. Implementation is likely to be very costly.

Track Two Projects

Additional Storage Facilities

Serious deficiencies currently exist in all storage facilities. BART currently utilizes a combination of District-owned and rental space for the storage and distribution of inventory materials. Storage space shortages will be more severe as inventory for expanded operation comes online. An assessment by staff indicates a significant increase in stock-keeping units, both consumable and repairable, over the next few years, plus additional storage needs further down the line. This project will construct and/or acquire a centralized storage and physical distribution center. The facility will be built to accommodate the repair shops and storage needs through 2010.

Hayward Training Center Expansion

Addition of second floor on existing training building in Hayward Yard. Second floor will house office space for up to 50 people. First floor will be converted to classroom space by the addition of walls in current office space. Each classroom will be equipped with a lab space.

Train Operator Training Simulator

The purpose of this project is to improve the training of BART train operators by providing a realistic simulation of train operation. This project is currently under conceptual development as indicated above in Track One.

Other Facilities System Capacity Capital Needs

As the *System Capacity Study* progresses, capacity-increasing facilities projects may surface.

SYSTEM EXPANSION PROGRAM

In recent years, BART has completed three major extensions into new markets (Colma, Pittsburg/Bay Point and Dublin/Pleasanton) as part of Phase 1 of the District's Extension Staging Policy. BART remains committed to completing the remaining Phase 1 extension projects. In the West Bay, construction is proceeding rapidly and successfully on BART's extension to San Francisco International Airport (SFO). In the East Bay, the Oakland Airport Connector is now well into the environmental assessment process. The supplemental EIR and preliminary engineering for the West Dublin / Pleasanton Infill Station and Transit Village are approaching completion, and an agreement with the cities and the developer is also underway. Project development for the proposed extension to the Warm Springs district of Fremont has been the subject of various efforts in the past, and is being given a fresh review in a new BART-to-San Jose feasibility study.

Beyond these Phase 1 projects currently in various stages of implementation, constituencies throughout the region continue to express desires to have BART extended further into new markets. Some communities have expressed interest in getting better BART service by having new infill stations built along the existing system. The needs of other communities are fueled by dramatically increasing traffic congestion in correlation with rapid growth, such as in Alameda County's I-580 corridor east of Dublin and Pleasanton, Contra Costa County's Route 4 corridor east of Pittsburg, and western Contra Costa County's I-80 corridor north of Richmond. Detailed planning studies have been proposed for state funding to analyze each of these corridors in depth. The transit connection between the East Bay and Santa Clara County is the subject of intense discussion throughout the region, and is the subject of a BART-to-San Jose feasibility study currently nearing completion.

To address the many questions stemming from all of these potential system expansions, the BART Board of Directors adopted a new Policy Framework for System Expansion in November 1999. Expansion opportunities include both system extensions as well as new infill stations on the existing system. In adopting the new policy framework, the Board directed staff to undertake a number of activities which will assist in identifying, prioritizing and phasing system expansion opportunities. These activities include discussing system expansion with various stakeholders, performing a systemwide strategic expansion opportunities assessment, and analyzing institutional and financial arrangements that support system expansion. The outreach effort to BART stakeholders includes both individual discussions and group forums. Strategic Opportunities Assessments will consider projects previously identified in the District's existing Extension Staging Program as well as other projects that may have significant potential to increase ridership. The analysis of institutional and financial arrangements identifies issues and alternatives if system expansion projects extend BART service past the District boundaries.

Track One Projects

BART Extension to San Francisco International Airport

By providing an alternative to driving to San Francisco International Airport (SFO), this extension (the BART-SFO Extension) will help diminish the volume of cars on the already congested US Highway 101 and 280 corridors, thereby reducing traffic congestion, fuel consumption and air pollution in the Bay Area. When completed, this extension will provide a convenient, cost-efficient intermodal transportation link between BART, Caltrain, SamTrans, West Bay communities and East Bay communities and connecting such communities to the fifth busiest airport in the United States and the eighth busiest airport in the world.

While SFO is already one of the heaviest trafficked airports in the U.S. and the world, use of SFO is only expected to rise. The number of Pacific Rim travelers using SFO is projected to increase by more than 70 percent in the next ten years. 74 airlines currently provide service at SFO, carrying 40 million passengers in 1998 with a projected 51 million passengers in 2006.

The BART-SFO Extension is the result of nearly 25 years of coordinated regional and local planning and is spearheaded by a partnership among six transportation entities, including BART, FTA, SFO, the California Transportation Commission (CTC), San Mateo County Transit District (SamTrans) and MTC.

The BART-SFO Extension will continue the BART system further into San Mateo County from the new Colma Station to a station at SFO, with three other stations at South San Francisco, San Bruno, and Millbrae.

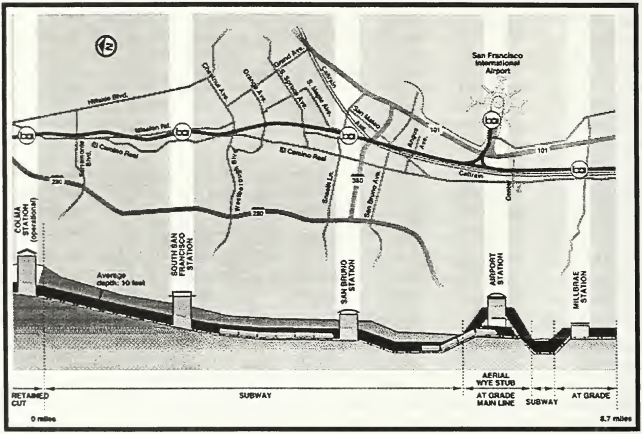
The intermodal station at Millbrae will directly link BART to Caltrain via a shared, connecting platform. Although BART and Caltrain will remain independent systems, the intermodal connection at Millbrae will offer the advantage of continuous rail travel throughout the Bay Area, providing transit passengers with 180.7 miles of regional rail system along the Peninsula Corridor. The Millbrae Station, the largest of the new stations, will be located north of the Millbrae Overpass and west of US Highway 101. The station's concourse will connect on the east side to SamTrans buses, kiss-and-ride drop-offs and on-site parking facilities for approximately 3,000 vehicles. Many access facilities are included in the station plan, including a tactile guide path for sight impaired users, specially designed elevators for easy wheelchair access and pedestrian and bicycle access. Bicycle lockers and racks will be provided at both sides of the station, located near the main access routes.

The South San Francisco station will be located between El Camino Real and Mission Road, north of Kaiser Permanente. The Hickey Boulevard Extension and a new BART access road will provide direct access to SamTrans bus bays, kiss-and-ride drop-offs and parking for over 1,300 cars.

The San Bruno station will be located on Huntington Avenue, behind the Tanforan Shopping Center and north of Interstate 380. A plaza will connect the station and the shopping center and a 1,000 space parking structure, accessible from Sneath Lane, will be situated over the SamTrans bus bays on Huntington Avenue.

Once completed, the joint BART/Airport Rail Transit station will be located at SFO Concourse H, adjacent to the new International Terminal. A set of quality standards approved by the BART Board of Directors will ensure that the majority of riders arrive within a five minute walk to their ticket counter.

The following is a graphic illustration of the BART-SFO Extension alignment, which will add 8.7 miles of new passenger service track to the BART system at an average depth of 10 feet.



A Full Funding Grant Agreement (FFGA) with the Federal Transit Administration (FTA) was secured for this project in June 1997. An amendment to this agreement was recently approved by the FTA and is currently under review by the United States Congress. This amendment would revise the scope of the project to include certain BART-SFO Extension related shop and yard improvements in lieu of the originally planned acquisition of rail cars. This scope substitution is a more cost effective and efficient method of delivering service. Listed below are the maintenance facility project elements proposed for inclusion in the BART-SFO Extension project.

Also under review by the FTA is the revised project budget, associated with the scope substitution, which adds $316 million in local funding. The revised $1.483 billion project budget includes the following funding sources: $750 million federal Section 5309 New starts funds, $152 million in State funds, $26.5 million in Bridge

Tolls from MTC, $200 million from the San Francisco International Airport, $171 million from SamTrans, $2 million from the San Mateo Flood Control District, $181.7 million from BART funds. In addition to the above project revenues, financing of $360,000,000 has been secured in the form of commercial paper and a loan from the Metropolitan Transportation Commission to address the multi-year schedule of federal revenues, receipt of which is, in part, scheduled several years after project completion.

As indicated above, BART plans to upgrade many of its shop and yard facilities as a part of the BART-SFO Extension.

Concord Shop Expansion

The first project to be implemented in the SFO-related shop and yard upgrade program is the Concord Shop Expansion. This project will convert two "flats" by installing in-floor vehicle lifts to provide under car access and will modify the tracks at the facility to facilitate vehicle triage and access to work spaces. In addition, four new lift-equipped work spaces will be added in an expanded building. Modifications of parts storage and other ancillary shop features will be made concurrently.

Daly City Yard Train Washer Facility

This project will provide a new train washer to service the fleet maintained at this West Bay maintenance facility.

Daly City Yard and Leads Modifications

Daly City Yard and Leads Modification project is expected to increase operational efficiency of the existing yard and provide additional capabilitites. Major elements of the project include conversion of a segment of mainline tracks into two transfer tracks, track layout modifications in the yard, addition of a wheel truing facility and train turntable.

Hayward Component Repair

This project will extend the front of the shop building on two floors, providing a 10,000 square foot expansion of the component repair shops that rebuild electrical and mechanical sub-systems.

Hayward Yard Track Improvements

This project will add track segments behind the main shop to facilitate the sorting of cars selected for maintenance. An additional track segment between the shop and yard will improve shop effectiveness by providing separate incoming and outgoing connectors, facilitating release and intake of cars and providing additional storage capacity.

Shop Lifts at Daly City, Hayward and Richmond Shops

This project will install 2 vehicle lifts each at the Hayward, Richmond and Daly City Shops which will facilitate the removal of large under-car components, increasing revenue vehicle maintenance capacity.

BART Extension to San Jose – Phase I (Warm Springs)

Phase I of the BART Extension to San Jose would extend 5.4 miles of double track from the existing Fremont Station, continuing southward in the railroad corridor and terminating at the Warm Springs Station just south of Grimmer Avenue in Fremont. Regional funding commitments have been secured for a portion of the cost of this project. On this basis, this project is partially listed in Track One, with the remaining unfunded balance in Track Two.

The BART Extension to San Jose – Phase I (Warm Springs) has a partial funding plan, which is listed in Track One. The Track One funding sources include (all in 1998 dollars) Measure B funds of $165.5 million, SamTrans funds of $165.6 million, Transit Capital Improvement funds of $7.7 million, bridge tolls of $33.75 million and BART funds of $21.1 million.

The remainder of the program is listed in Track Two for $207.65 million. State and interregional funding sources are proposed to fund the remaining amount.

BART Extension to State Route 4 Corridor

This estimated $200 million project would extend the new Pittsburg/Bay Point segment further east in Contra Costa County, to a new station at Railroad Avenue. A $30 million portion of this project is listed in the Track One program on the basis of remaining funds from Contra Costa County's transportation sales tax, along with other funding sources. The System Expansion policy framework adopted in November and a strategic opportunities assessment, potentially funded with budget surplus funds under the Governor's *Traffic Congestion Relief Plan*, will guide the District's system expansion decision-making. The strategic opportunities assessment is listed separately under *Studies, Research and Development*.

BART Extension to San Jose – Phase II (Santa Clara)

Phase II of the BART Extension to San Jose would extend 16.0 miles of double track from the proposed Warm Springs Station in Fremont, continuing southward in the railroad corridor until crossing over Highway 101 in San Jose where the alignment goes underground through downtown San Jose, curving to the northwest at the Diridon Station in San Jose and terminating adjacent to the Santa Clara Caltrain Station. New BART stations are proposed at Montague/Capitol in Milpitas, Berryessa, Alum Rock, San Jose State University, Market, Diridon/Arena in San Jose plus one station in the City of Santa Clara.

In his *Traffic Congestion Relief Plan*, the Governor proposed that $725 million be provided by the state for this project. That portion of this extension will be included in Track One. The remaining portion of the project, the cost of which is yet to be determined, is listed in Track Two.

Oakland Airport Connector

The Oakland Airport Connector Project would directly connect the BART Oakland Airport/Coliseum Station with the Oakland Airport terminals via a fully automated, elevated train system, providing improved transit service for air travelers and air terminal employees. The Connector, a solution favored by the Port of Oakland and the Coliseum community, is projected to carry 3.3 million people per year by 2010 and transport passengers five times faster than ground-based transit. Funding for environmental assessment and preliminary engineering has been secured. In addition, the *CIP* plans for the receipt of Regional and Interregional State Transportation Improvement Program funds after Fiscal Year 2005. These funded and planned project elements are listed in Track One. The remaining unfunded balance for construction is in Track Two.

This planned $129.9 million (in 1998 dollars) extension is listed mostly in the Track One program. The funding plan for the project calls for the Port of Oakland to contribute $25 million (in 1998 dollars) to the project. $7 million, of which $1.5 million represents a portion of the Port of Oakland's commitment, has been programmed for funding from the 1998 and 2000 State Transportation Improvement Program for preliminary engineering and environmental work. Another $31 million (in 1998 dollars) is planned for outyear STIP funding, from both the regional and the interregional programs. Grant applications have already been submitted to the Alameda County Congestion Management Agency and Caltrans for this amount. In addition, the funding plan assumes $65.8 million (in 1998 dollars) of sales tax revenues from Alameda County's Measure B Reauthorization Plan, which is expected to be put on the ballot for the November 2000 election. The $2.7 million (in 1998 dollars) balance of the project cost is listed in Track Two pending identification of additional funding sources.

West Dublin/Pleasanton Infill Station and Transit Village

BART is working with Jones Lang LaSalle (LaSalle) on the development of a mixed-use project, which will include the West Dublin/Pleasanton BART Station in the median of I-580, the requisite ancillary transit facilities and private development on either side of the freeway. Within the City of Dublin, a 160-unit residential project and a 240-room hotel are proposed in addition to the transit facilities (an approximate 600-space parking structure, bus intermodal facility and pedestrian bridge to the station). Within the City of Pleasanton, an approximate 170,000 square foot office building is proposed in addition to the transit facilities (an approximate 400-space parking structure and pedestrian bridge to the station). This unique public/private venture between BART and LaSalle also involves the Cities of Dublin and Pleasanton, Caltrans and ABAG.

This project is listed in Track One with a cost yet to be determined. The supplemental EIR and preliminary engineering for this project were funded for $1.2 million by the Alameda County Congestion Agency in January 2000. The remaining elements of this project are pending a final agreement with the Cities of Dublin and Pleasanton and with the developer. The public portion of the overall project will be paid for by the proceeds of a bond issue, with repayment of the bonds proposed from a combination of private funds from long-term lease of BART property, contributions from the Cities of Dublin and Pleasanton of tax revenues to be generated by the private development, and BART revenues generated by the station and other potential funding sources. In a November 1999 resolution, the BART Board agreed "to assume BART's share of debt for design, construction and operation of the proposed West Dublin/Pleasanton BART Station, contingent upon the completion of the CEQA process and adoption of the proposed project. Debt service will be covered by some combination of farebox revenue, fare surcharges, parking charges and/or other sources subsequently identified." The Board has also indicated that funding for the West Dublin/Pleasanton Infill Station and Transit Village project is not to come at the expense of BART system reinvestment projects.

Track Two Projects

Other than the BART-SFO Extension, the above Track One Projects are partially funded. A component of each project is listed under Track Two until full funding plans are developed. A substantial portion of BART's Phase 1 Extension Program is nearing completion. Investment in system expansion beyond the Phase 1 Extension Program will be guided by BART's System Expansion Policy Framework, recently adopted in November 1999. Under this policy framework, BART will engage in strategic opportunities assessments prior to making system expansion investment decisions.

BART Extension to San Jose – Phase I (Warm Springs)

This project, listed in greater detail above under Track One Projects, is only partially funded. The $207.6 million (in 1998 dollars) balance of the project cost is listed in Track Two. State and interregional funding sources are proposed to fund the remaining amount.

Oakland Airport Connector

This project, listed in greater detail above under Track One Projects, is only partially funded. The $2.7 million (in 1998 dollars) balance of the project cost is listed in Track Two, pending identification of additional funding sources.

BART Extension to Livermore Corridor

This project, as currently proposed, would extend the existing rail line from the East Dublin/Pleasanton station towards the foothills of the Altamont Pass approximately 10 miles to the east. The extension would travel along the median of I-580 with two stations in Livermore. At the terminous of the line, a shop and yard would be built to support this extension.

BART Extension to State Route 4 Corridor

This project, listed in greater detail above under Track One Projects, is only partially funded. The $170 million balance remains in Track Two, pending additional funding.

This project, as currently proposed, would extend the existing rail line from Bailey Road in West Pittsburg to Railroad Avenue in Pittsburg. The BART line would extend along the median of State Route 4 with one new station at the interchange of Railroad Avenue and State Route 4.

BART Extension to West Contra Costa County Corridor

This project, as currently proposed, would extend the BART line from the existing station in Richmond to an interim terminal station in the vicinity of Hilltop Mall. The next phase of this line would be a continuation to a terminal station in the vicinity of Crockett.

30th Street Mission Station

BART is examining the feasibility of a new subway station near 30th Street and Mission Street in San Francisco. This station would be the first new BART station in San Francisco since the completion of the Embarcadero Station in the mid-1970's. The new station would enhance transit service to neighborhoods in the Mission, Bernal Heights, Upper Noe Valley, Fairmont Heights and Glen Park and close the largest gap along the San Francisco line.

A possible feature of the above project is a pocket track that would assist BART operations providing greater flexibility and quicker recovery time from system delays.

BART Extension to San Jose – Phase II (Santa Clara)

This project, listed in greater detail above under Track One Projects, is only partially funded. The remaining portion of the project is listed in Track Two.

Commuter Rail System

Another approach to providing high-quality rail service to some of the planned Phase 2 and 3 extension corridors relatively soon is traditional commuter rail. BART has completed evaluations of several possible new commuter rail lines to serve these corridors (and beyond). This commuter rail program could add significant new passenger rail service to the regional rail network. The program identifies a comprehensive service plan that would provide a near-term commute alternative, including critical intermodal connections, to alleviate bottlenecking in some of the most heavily congested commuter corridors in the Bay Area.

STUDIES, RESEARCH AND DEVELOPMENT PROGRAM

This program has been updated to include planning efforts that guide BART's capital investment decisions. These studies vary in scope. Some studies, such as the *System Reinvestment*, *System Capacity* and *System Expansion Studies*, are comprehensive, evaluating key issues that impact the entire system. Other studies deal with specific projects or discrete ideas. This section is intended to list the studies that are currently ongoing or planned to better determine the direction of capital investment at BART. Unless otherwise noted, these efforts are funded with capital funds.

Track One Projects

Automatic Fare Collection Capacity Expansion Study

This study, commenced early in Fiscal Year 2000, assesses BART's fare collection capacity needs after the completion of the Automatic Fare Collection Equipment Modernization / Translink Implementation project, analyzes the sufficiency of BART's fare collection equipment to address the future fare collection needs of the District, and evaluates the necessity and cost of expanding BART's existing fare collection system.

Caltrans Seismic Engineering Study

This Caltrans-sponsored engineering study identifies those BART structures, which, should they collapse due to an earthquake, would put non-BART infrastructure at risk. In addition, this study, now nearing completion, estimates the cost of seismically retrofitting such structures. This study further identifies those retrofits needed to meet BART's Serviceability Standard and to assess the cost of such retrofit.

Customer Comment Tracking

As customers call BART's Customer Comment Line, staff in the Customer Service Center track the content of customer comments.

Customer Satisfaction Survey

Biennial Customer Satisfaction Surveys provide a reliable source of customer input on District operating and capital priorities. This survey is funded with operating funds.

Latent Demand Study

This study assesses strategies for encouraging further ridership growth in the core system with an emphasis on off-peak and reverse commute travel where excess capacity exists. This study is funded with operating funds.

Seismic Vulnerability Study

The Systemwide Seismic Vulnerability study, which may take place concurrently with the Serviceability Standards and Local Seismic Retrofit Program, involves determining the vulnerability of all facilities, structures, and equipment in the BART system to earthquakes, and developing an overall retrofit plan so that long post-earthquake service interruptions are minimized. The facilities to be studied include, but are not necessarily limited to: aerial structures, the Transbay Tube, passenger stations, tunnels, maintenance shops, office buildings, power supplies and computer equipment. The study shall include cost estimates of required retrofits and recommendations for packaging of retrofit work. Unless convincingly demonstrated to the contrary by the study, BART believes the systemwide retrofit work should be prioritized as follows best to meet operational requirements:

- Structures, power and mechanical, and other requirements necessary for train operation from the Coliseum station to the Oakland Wye; from the west portal of the Berkeley Hills tunnel to the Wye; from Ashby station to MacArthur station; and from the Wye to the Colma station.
- Seismic joints of the Transbay tube.
- Structures, power and mechanical, and other requirements necessary for train operation south of the Coliseum to the South Hayward station (on the A-Line); north of Ashby station (on the R-Line); and east of the east portal of the Berkeley Hills tunnel (on the C-Line).
- Berkeley Hills tunnel.
- Remaining facilities, structures and equipment.

Signage Evaluation Study

BART customer needs with respect to signage have changed due to many factors. BART has funded this signage needs assessment at selected sites. The types of signage to be reviewed include identifying, wayfinding, instructional/informational, regulatory, safety and connecting transportation informational signs. Signage will be evaluated at, in and around BART stations and maintenance facilities.

This study will include the following elements:

- Inventory and evaluation of signage several representative sites;
- Solicitation of input from stakeholders;
- Development and demonstration of prototypes;
- Estimation of costs for full system evaluation and implementation (Phases II-III); and
- Presentation of signage investment options to Board.

Strategic Opportunities Assessments

In his *Traffic Congestion Relief Plan*, the Governor proposed the funding of these three studies in the I-580 / Livermore, West Contra Costa County and State Route 4 Corridors. The goal of Smart Regional Connections studies is to develop cost effective transportation projects to enhance regional mobility and promote transit supportive growth and development.

I-580 / Livermore Corridor

The Governor's plan proposed $7 million to develop a Regional Transit Connection Plan for the I-580 Corridor in eastern Alameda County. The traffic congestion in this corridor has increased tremendously over the last decade due to the growth of jobs and affordable housing in eastern Alameda County and in San Joaquin County. Over the last 25 years, a number of studies have been completed addressing the needs of this corridor in partnership with Livermore, Dublin, and Pleasanton. This assessment would update, refine and consolidate these previous studies. The Regional Transit Connection Plan for the I-580 / Livermore Corridor would be created in partnership with local communities to develop strategies that are cost effective, integrated with the regional transportation network, and support smart growth.

West Contra Costa County Corridor

The Governor's plan proposed $3 million to conduct a Strategic Transit Plan that would consider a broad regional perspective while developing strategies to improve transit service and consider land use strategies in one of the most congested highway corridors in the region. After defining a limited number of project alternatives, each would be evaluated for their costs and benefits. Through an extensive public participation process, consensus on a preferred project would be achieved.

State Route 4 Corridor

The Governor's plan proposed $7 million to develop a Regional Transit Connection Plan for the State Route (SR) 4 Corridor in eastern Contra Costa County. SR 4 is the only major east/west transportation route through eastern Contra Costa County and has been developing rapidly. The study to develop this plan would build on and expand previous work by including not only the Cities of Pittsburg and Antioch but also the communities to the east. The study would lay the groundwork for the staging of transit improvements with increments of job and housing growth that is both sensible and cost effective.

From time to time, the District may invest in or seek funding for strategic opportunities assessments in other areas.

System Reinvestment Study

BART's *Capital Improvement Program* only plans for ten years of capital requirements. However, much of BART's physical infrastructure has a useful life of twenty years or longer. This plan, when completed, will focus on BART's long range capital objectives and financial needs over thirty years and will feed into the MTC's regional, long-term planning document, the *Blueprint for the 21st Century*. The *System Reinvestment Study*, which commenced in November 1999, is funded with operating funds.

System Capacity Study

This study will review the capacity of the existing system to meet the transit needs of BART passengers. Given recent rising ridership and the increasing demands on the system to carry more passengers longer distances, this study will assess the capacity enhancement needs of the BART system.

System Expansion Study

The BART Board of Directors adopted a Policy Framework for System Expansion in November 1999. At the same time the Board directed staff to undertake a number of activities which will assist them in identifying, prioritizing and phasing system expansion opportunities. These activities include discussing system expansion with various stakeholders, performing a systemwide strategic expansion opportunities assessment, and analyze institutional and financial arrangements that support system expansion. The outreach effort to BART stakeholders includes both individual discussions and group forums. The opportunities assessment considers both existing Extension Staging projects as well as other projects that may have significant potential to increase ridership. The analysis of institutional and financial arrangements identifies issues and alternatives if system expansion projects extend BART service past the District boundaries.

Superconducting Magnetic Energy Storage (SMES)

Two related projects are studying the technical and economic feasibility of utilizing SMES technology to minimize voltage sag problems in critical locations in the system. Addressing the voltage sag problem is critical to plans to operate trains with tighter headways to support projected future service levels. Multiple approaches are being pursued. A Federal Transit Administration (FTA) grant is currently funding a study to evaluate the feasibility of applying SMES to the BART system. Other possible approaches being considered for investigation include cryogenic power converters to control voltage output of existing substations and high temperature superconducting materials.

Translink Analysis

Evaluate the financial impact of the implementation of the Translink Fare Collection System including a comparison of costs with the existing BART fare collection system. In addition, this project will include a customer evaluation of Translink.

BART to San Jose Feasibility Study

Elected officials from the Cities of Fremont, Milpitas, San Jose and Santa Clara have requested a feasibility study be performed on a proposed BART extension from the existing Fremont Station through Fremont, Milpitas and downtown San Jose to a terminus station in the City of Santa Clara. Elected officials want to know the cost of such a project, projected benefits, such as ridership, and various likely construction issues, including alignment concerns.

These elected officials requested that a Technical Advisory Committee (TAC) be formed to oversee the study and recommend a method of funding the study. Four cities and three transportation agencies are jointly funding the study. In addition, two other transportation agencies are members of the TAC without contributing to the study.

The primary tasks for the BART to San Jose Study include review of existing studies, project definition, project evaluation, identification of funding alternatives, development of an implementation plan, and completion of final report with recommendations. The evaluation of the proposed project includes ridership and parking forecasts, cost estimates and cost effectiveness, system productivity, potential impacts to BART, and engineering feasibility. The potential for transit oriented development in proximity to the proposed BART stations will also be examined.

Track Two Projects

From time to time, the District may invest in or seek funding for other studies and planning efforts that will lend increased understanding of issues that inform capital investment decisions. Research and development projects, too, may at times be raised as worthy of investigation and investment.

Platform Noise Reduction Study

This project would study noise levels at those BART stations that are adjacent to freeways or other significant noise generators. After determining current noise levels, the study would perform feasibility, engineering and cost analysis for a set of noise reduction strategies, which will be developed by BART in conjunction with stakeholders and surrounding communities.

The goal of the proposed strategies would be to reduce the noise to levels, which would allow passengers to hear public address system announcements, while minimizing the noise impact on surrounding residences. In addition, such strategies would seek to enable visually impaired passengers to use noise cues in navigating BART stations.

Chapter Three: Funding Strategy

INVESTING IN CAPITAL IMPROVEMENT

OVERVIEW OF FUNDING SOURCES

External funds, in the form of grants, are key components of BART's capital programming efforts. No grant programs are entitlements -- BART must constantly compete for grants at the federal, state and local levels. Moreover, each funding program has its own peculiar conditions of eligibility and compliance. This chapter discusses some of the major funding programs that BART relies on to maintain and build on its system. Appendix One: Funding includes four charts, which summarize the funding sources available to BART, identifying the amount available, eligible uses and the administering agency(ies).

Federal Funding Programs

Nearly all transit properties, including BART, rely on federal funding programs to support renovation and replacement of their capital stock and infrastructure. Unlike many other Bay Area operators, BART does not receive federal funds into its operating budget. Two major transit-only funding programs, the Federal Transit Act Section 5307 Formula Funds and Section 5309 Fixed Guideway are the workhorses of BART's capital replacement programs. Both of these programs are governed by the rules of the Metropolitan Transportation Commission's (MTC's) Transit Capital Priorities process. Two additional federal programs are flexible: their monies can be "flexed," based on local decision-making, between highway or transit projects. The flexible funding programs include the Congestion Mitigation and Air Quality Improvement Program (CMAQ) and the Surface Transportation Program (STP). All four of these programs are managed by MTC, the federally designated Metropolitan Planning Organization for the Bay Area. MTC's Transportation for Livable Communities (TLC) uses a blend of STP and CMAQ funds for relatively small-scale projects that promote community livability, multi-modal access, and downtown/Main Street revitalization. Transportation Enhancements Activities funds (Enhancements) are devoted to projects that enrich the transportation experience.

Congestion Mitigation and Air Quality Improvement Program

In the pre-ISTEA era, paving our way out of heavy traffic problems was the common solution to congestion. Unfortunately, in air basins with weak growth controls and ever-growing mobility needs, adding freeway lanes actually worsened both air quality and congestion. In 1991, ISTEA's CMAQ program was launched in urbanized areas unable to meet EPA's "Air Quality Conformity" standards. CMAQ-funded projects are supposed to relieve congestion and improve air quality without adding freeway capacity. With the passage of TEA-21, MTC developed three programs for allocating CMAQ funds:

Local and Regional Rehabilitation Program (of CMAQ-eligible capital projects): BART's ongoing A and B Car Comprehensive Renovation Program is receiving CMAQ funds.

Corridor Management Program: MTC developed a Corridor Management Program to fund minor efficiency and operational improvements along the region's most congested traffic corridors. For the first three years of TEA-21, MTC funded projects drawn from Corridor Management Plans developed by the CMAs. For the second three years of TEA-21, the CMAs were delegated the authority to choose the projects for this fund source. BART and Pittsburg's jointly proposed Pittsburg / Bay Point Parking Expansion and Access Improvements project will be funded with CMAQ funds.

Enhancements Program

Enhancements Programs are managed by the region's respective Congestion Management Agencies. Among the 12 Enhancements-eligible activities are: removing outdoor advertising, buying scenic vista lands, and funding bicycle and pedestrian improvements. BART recently secured Enhancements funding to construct a pedestrian ramp to the southern entrance of the Lafayette Station.

Federal Transit Act Section 5307 Formula Funds / Section 5309 Fixed Guideway

MTC's Transit Capital Priorities (TCP) process establishes a multi-year prioritized listing of capital projects. Funds programmed via the TCP include FTA Section 5307 Urbanized Area Formula and Section 5309 Fixed Guideway Formula funds. Despite its complexities, the TCP process has for twenty years proven a means for equitably distributing scarce federal transit funds across a fractious region.

The guiding principle of TCP is to fund "essential projects that replace and sustain the existing transit system capital plant." Thus, replacement projects are assigned funding priority over system expansion or operating capital, such as capitalized maintenance.

The Section 5307 Program alone has contributed $81.68 Million to BART for Fiscal Years 1992-2000. And for the last three years of TEA-21, covering Fiscal Years 2001-2003, BART expects approximately $15.5 Million per year in Section 5307 funding.

In recent years, TCP funds for BART have gone to sustain mainline service. Projects receiving Section 5307 funds include:

- Wayside Train Control Equipment Renovation
- Replace Running Rail
- Automatic Fare Collection Equipment Modernization
- Traction Power Equipment Renovation
- ADA-related projects, such as Platform Edge Detectable Warning Treatment

From BART's perspective, the TCP process has been MTC's vehicle for meeting its $450 million Resolution 2672 commitments to BART. Per Resolution 2672, $240 million in Section 5309 Fixed Guideway funds will be awarded to the A and B Car Comprehensive Renovation Program. Future funding for other large-scale, critical renovation projects (e.g., C1 Car Renovation) could come from this source as well.

Federal Transit Act Section 5309 New Starts

The New Starts program is the FTA's vehicle for funding the nation's largest and highest profile transit capital investments. Many projects are considered for New Starts funds. But only those projects that have a binding Full Funding Grant Agreement (FFGA) between the project sponsor and the federal government will actually receive these highly competitive funds. BART's BART-SFO Extension, described in *Chapter Two: Program of Projects* will be the beneficiary of $750,000,000 in New Starts funds.

Surface Transportation Program

Since the inception of the federal Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and carrying through the successor Transportation Equity Act for the 21st Century (TEA-21), Flexible Fund Programs have enabled transit projects to compete with roadway projects on an even playing field.

In the Bay Area, most STP funds have, under MTC's auspices, been devoted to preserving the existing transportation infrastructure. The most recent cycle of TEA-21 STP fund programming, covering federal Fiscal Years 2001-03, will fund numerous BART projects including Transbay Tube Ventilation Replacement and Renovation of the Hayward Yard Train Washer.

Transportation for Livable Communities

Over the six years of TEA-21, MTC will devote $54 million to projects that are oriented toward relatively small-scale projects that promote community livability, multi-modal access, and downtown / Main Street revitalization. TLC projects must:

- support community development or redevelopment efforts
- enhance community identity, mobility and overall quality of life
- be based upon an extensive collaborative planning process that includes affected community stakeholders

The TLC program can tap into STP or CMAQ funds. BART is in a partnership with the Mission Housing Development Corporation and the San Francisco Department of Public Works for improvements linked to the 16th Street Mission Station (further described in *Chapter Two: Program of Projects*).

State Funding Programs

This year has been an exciting one for state funding programs. Several state officials have developed transportation funding plans and proposals. The Governor, himself, recently released his Traffic Congestion Relief Plan (TCRP). This was a proposed augmentation to the State Transportation Improvement Program (STIP), which would have accelerated three years of STIP programming. This plan also included a proposal for utilizing the expected state budget surplus. The TCRP relied on a combination of General Obligation bonds and anticipated FY 00 state budget surplus. Assemblymember Torlakson has also been at the forefront of transportation funding issues with a budget surplus proposal and a budget appropriations request for transportation. State Senator Burton last year proposed an amendment to the state constitution, that, if passed by a majority of the legislature and the electorate, would reduce the voter authorization requirement for county transportation sales tax measures from a supermajority (better than two thirds) to a simple majority (better than 50%). Simultaneous with the constitutional amendment would have been the reauthorization of existing sales tax measures and the authorization of new ones.

All this state level activity has generated a significant amount of bustle on the local level. Each county has approached the potential funding opportunities differently. The Metropolitan Planning Commission (MTC) has added some cohesion to the regional activity and planning processes through the release of its *Bay Area Transportation Blueprint for the 21st Century Phased Implementation Plan* in March 2000.

Potential State Budget Surplus

In April 2000, the Legislative Analyst's Office for the State of California wrote "we estimate that if current strong tends continue through the end of the year, revenues in 1999-00 will exceed the administration's January budget forecast by more than $4 billion." It has been estimated that as much as $2 billion might be available for transportation from the projected state budget surplus. Many legislators have proposed transportation plans, which would use some of the project surplus. On April 6, 2000, Governor Davis released his *Traffic Congestion Relief Plan*, which would provide funds for several BART studies, capacity enhancement and expansion projects, including a possible San Jose Extension.

State Constitutional Amendment 3

Senate Constitutional Amendment 3 (SCA 3) is a proposed constitutional amendment originally intended for the November 2000 ballot that would enact or extend, in counties that have approved transportation expenditure plans, a half cent sales tax for transportation purposes. It is estimated that SCA 3 could raise $40 billion over the 20 year duration of the State's various half-cent sales tax programs. It requires a simple majority vote by the public.

The prognosis for SCA 3 passage, which requires a 2/3 vote in the Legislature is uncertain, especially since the Governor has released his own proposal for the expenditure of approximately $1.5 billion in the Bay Area on transportation. At this time it will not be on the November ballot. Nevertheless, the four counties with BART service are developing their Expenditure Plans in anticipation of the eventual passage of SCA 3. Alameda County has already developed an Expenditure Plan. Contra Costa and San Mateo Counties hope to adopt plans in June.

Should SCA 3 pass the legislature, and the ballot this November, the following projects could receive funding: Warm Springs/South Bay Extension; Oakland Airport Connector; Pittsburg Extension to Railroad Avenue; Parking Expansion and Access Improvements; More funding for Paratransit Services; Station Area Development; and Advanced Automatic Train Control Phases IV and V. In San Mateo County, staff is advocating that the County Transportation Authority's pending Expenditure Plan (covering the years 2009-2028) broaden "Caltrain improvement" language to "rail improvements." This generalized term could give BART-SFO Extension rehabilitation projects and BART station area improvements entry into San Mateo County's future sales tax or other rehab program.

It should be noted that Alameda County intends to place a sales tax reauthorization measure on the ballot for this November, which requires a 2/3 vote, regardless of the outcome of SCA 3.

State Funding for Public Transit Account

Prior to the passage of SB 45, the Public Transit Account (PTA) provided funding for transit capital projects. The PTA is a major capital funding source for Capitol Corridor service, managed by BART staff. SB 45 restructured the funding of the Account and effectively made transit capital improvements the last priority for funds. Over the last five years no funding has been available for transit capital projects and, furthermore, the PTA is currently facing a projected deficit of $53 million by FY04 in funds necessary for other activities funded by the Account. AB 1612, authored by Assemblyman Tom Torlakson, would transfer $100 million annually from the General fund to the PTA. This would backfill the deficit and make revenues available for transit capital improvements.

State Transportation Improvement Program

The STIP is divided into two programs – the Regional Transportation Improvement Program (RTIP) and the Interregional Transportation Improvement Program (ITIP). Both of these programs fund rehab and expansion-type projects. In the Bay Area, the RTIP is a compilation of STIP-funded project lists prepared by the 9 counties respective Congestion Management Agencies. The RTIP itself is assembled by MTC and carried forward to the State Transportation Commission on a two-year cycle. ITIP funding, on the other hand, is administered by the California Department of Transportation (Caltrans), with final allocation also made by the California Transportation Commission (CTC). Allocation of funding for the ITIP depends on evidence that a project will promote interregional connectivity by linking a regional transit system with an international airport, for example.

STIP Augmentation Proposed for 2000 (Governor Davis)

In January, "Governor Davis unveiled elements of the Administration's transportation strategy as part of his proposed budget for Fiscal Year 2000-01. The speech and associated materials announced an initiative to program significant additional funding in the State Transportation Improvement Program (STIP), by bringing forward $3 billion in additional programming capacity from future federal funds." The Governor proposed that this acceleration of STIP funding from Fiscal Years 2005-07 be accomplished through the issuance of GARVEE bonds, a mechanism that enables the California Transportation Commission to issue bonds secured by anticipated future federal funds. Later, Senator Burton and Assemblymember Villaraigosa formally opposed the Governor's STIP augmentation plan, stating that it is an inappropriate, and possibly illegal, use of GARVEE bond authority.

Approximately $3 billion would be available for 2000 STIP augmentations under the proposed scenario should this process move forward. Approximately $600 million of the new capacity is derived from reassessment of cash available from the State Highway Account; the balance assumes "advancing" Fiscal Year 2005 through Fiscal Year 2007 federal funds into the 2000 STIP using "GARVEE" bond authority.

Although some counties are continuing to move forward with applications for potential projects to be funded though the STIP augmentation, it appears unlikely at this time that the STIP augmentation will be implemented. BART has submitted several projects in Alameda, Contra Costa and San Francisco counties for STIP augmentation, including Automatic Fare Collection Equipment Expansion, Oakland Airport Connector and various station-area improvement and development projects.

Local Funding Programs

County Transportation Sales Tax Expenditure Plans

The BART counties – Alameda, Contra Costa and San Francisco – each have voter-approved sales tax measures dedicated solely to transportation. Each county's expenditure plan lays the groundwork for the allocation of sales tax proceeds. The plans were presented to the voters typically after many months of public outreach.

Alameda County's Measure B will lapse in 2002. Accordingly, ACTA has developed and approved an expenditure plan that includes funding for BART projects, including the BART Extension to San Jose – Phase I (Warm Springs), the Oakland Airport Connector and paratransit services. Because this is an approved plan, the *CIP* includes the Measure B Reauthorization Plan as a Track One funding source.

Funding from the expenditure plans for the remaining two counties is being pursued for BART capital projects. BART has proposed a list of projects for both the Contra Costa and San Francisco Counties expenditure plans.

The expenditure plan list for Contra Costa County includes crossovers near the Richmond, Pleasant Hill, Pittsburg / Bay Point and North Concord / Martinez

BART stations, Advanced Automatic Train Control (AATC) Phases IV-V, Automatic Fare Collection (AFC) Equipment Expansion, BART station access improvements, Pittsburg / Bay Point Extension to Railroad Avenue and other improvements. Contra Costa County is currently considering this list of projects. However, the existing sales tax measure would not be renewed until 2009, so it is unlikely that the county would adopt a final expenditure plan at this time.

BART's expenditure plan submittal for San Francisco County includes station area development projects at 16th Street Mission, 24th Street Mission, Balboa Park and Glen Park stations, as well as AFC Equipment Expansion, AATC Phases IV-V and 30th Street BART Infill Station. Although San Francisco's sales tax measure would also not need to be renewed until 2009, San Francisco County is currently moving forward with the adoption of an expenditure plan. The schedule indicates that the expenditure plan will be adopted along with the Countywide Transportation Plan in June.

Bridge Tolls

The Metropolitan Transportation Commission, acting since 1998 as the Bay Area Toll Authority (BATA), an entity created by the California Legislature, administers the base $1 toll from the Bay Area's seven state-owned toll bridges. These funds are allocated by BATA to various local entities for multiple purposes, including the provision of transit service. BART generally requests bridge tolls to provide the local match to Section 5307 or Section 5309FG grants.

Other Local Funds

BART works closely with local communities to fund transit-oriented development around BART stations. In many instances, local jurisdictions provide all or a portion of the funding required for a station area development project.

BART Funding Programs

Allocations from the Operating Budget

In addition to the bond issues, the funding program has for several years included direct allocations from the operating budget to the capital program. Between Fiscal Year 1997 and Fiscal Year 2000, $63.8 million was allocated from the operating to the capital budget. The Fiscal Year 2001 Short Range Transit Plan forecasts operating allocations of $147.8 million to the capital plan over the period from Fiscal Year 2001 to Fiscal Year 2010, bringing the total program of allocations from the operating plan to $211.6 million between Fiscal Year 1996 and Fiscal Year 2010.

BART Sales Tax Revenue Bond Issues

The first bond issue was sold in May 1995, netting $130 million. The second bond issue was sold in March 1998, combining the originally planned 1997 and 1998 issues. This produced $218 million for capital projects, of which $130 million was used for renovation. In October 1999, BART issued a third series of bonds, which generated $130 million for capital projects, including $90 million for the A and B Car Comprehensive Renovation Program. In combination, therefore, BART has generated $350 million for renovation, exceeding the required commitment under Resolution 2672 by $150 million. A last series of bonds is required to complete the A and B Car Comprehensive Renovation Program and is currently expected to be issued during Fiscal Year 2000 to generate the remaining approximately $39 million of bond proceeds, based on current interest rates.

Financial projections carried in the companion document Short Range Transit Plan (SRTP) indicate that the combined debt service for all of the bond issues can be sustained with the revenue produced by the series of three fare increases already implemented.

The Treasurer-Controller's Office is planning to undertake a debt capacity analysis, which will review the District's ability to issue additional bonds in the future.

Innovative Financing Mechanisms

BART has in the past used innovative financing mechanisms to fund a portion of the capital program. In 1995, BART entered into a cross border lease, which resulted in proceeds of $2.7 million for capital projects. Other financing mechanisms, which the District could consider, include parking revenue bonds.

Chapter Four: Program Costs

CAPITAL PROJECT BUDGETS

TOTAL TRACK ONE PROGRAM CAPITAL NEEDS

TOTAL TRACK ONE PROGRAM CAPITAL SOURCES

TOTAL TRACK TWO PROGRAM CAPITAL NEEDS

Total Track One Program Capital Needs

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
System Reinvestment Program													
Rolling Stock	485,958	380,339	105,619	72,803	22,600	4,600							5,616
Mainline	210,611	65,253	145,358	17,903	12,097	12,939	21,668	12,408	11,487	13,281	13,693	14,120	15,762
Stations	279,388	156,383	123,005	21,901	9,923	13,473	6,845	6,857	6,943	14,032	14,122	8,016	20,893
Controls & Communications	314,933	199,256	115,677	18,585	17,701	7,296	8,020	23,129	7,834	8,056	8,285	8,522	8,248
Facilities	28,843	21,383	7,460	1,340	80	1,080	1,080	1,080	80	80	80	80	2,480
Work Equipment	100,460	25,246	75,214	5,240	7,445	5,180	5,905	8,119	6,375	6,615	6,860	11,605	11,870
Total System Reinvestment Program	*1,420,194*	*847,860*	*572,334*	*137,772*	*69,846*	*44,568*	*43,518*	*51,593*	*32,719*	*42,064*	*43,041*	*42,344*	*64,869*
Seismic Retrofit Program	*222,566*	*9,540*	*213,026*	*211,328*	*1,698*								
Service and Capacity Enhancement Program													
Rolling Stock													
Mainline													
Stations	155,094	59,518	95,577	11,530	103	106	109	10,613	13,866	12,994	7,998	13,627	24,630
Controls & Communications	116,787	1,187	115,600		10,000	10,000	19,600			25,000	25,000	26,000	
Facilities	10,805	4,925	5,880						5,880				
Total Service and Capacity Enhancement Program	*282,686*	*65,630*	*217,057*	*11,530*	*10,103*	*10,106*	*19,709*	*10,613*	*19,746*	*37,994*	*32,998*	*39,627*	*24,630*
System Expansion Program													
BART Extension to San Francisco International Airport	1,483,200	1,436,100	47,100		47,100								
BART Extension to San Jose - Phase I (Warm Springs - in 1998 $)	393,702	55,350	338,352		33,100	33,200	33,100	33,100	60,852	36,250	36,250	36,250	36,250
Oakland Airport Connector (in 1998 dollars)	127,300	4,000	123,300	23,993	20,993	20,993	28,660	28,660					
West Dublin / Pleasanton Infill Station and Transit Village (1)	1,200	1,200	0										
BART Extension to San Jose - Phase II (Santa Clara)	725,100	0	725,100	100	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556
BART Extension to State Route 4 Corridor	30,000	0	30,000					5,000	5,000	5,000	5,000	5,000	5,000
Colma Extension	180,000	180,000	0										
Dublin/Pleasanton Extension	546,000	546,000	0										
Pittsburg/Bay Point Extension	508,000	508,000	0										
Total System Expansion Program	*3,994,502*	*2,730,650*	*1,263,852*	*24,093*	*181,749*	*134,749*	*142,316*	*147,316*	*146,408*	*121,806*	*121,806*	*121,806*	*121,806*
Studies, Research & Development Program	*33,320*	*15,097*	*18,223*	*18,035*	*63*	*63*	*63*						
Total Track One Program Capital Needs	5,953,267	3,668,776	2,284,491	402,759	263,458	189,485	205,606	209,522	198,873	201,863	197,845	203,776	211,305

* Note: all figures in thousands of dollars.

Total Track One Program Capital Needs are identified as committed *as of the commitment date.*

[1] The remainder of the project is still under negotiation with BART's funding and development partners.

Total Track One Program Funding Sources	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Federal Funding Sources													
Federal Section 5309	1,292,178	1,141,560	150,618	0	0	0	11,487	15,503	9,771	26,400	26,624	27,656	33,177
Federal Section 5307	171,217	50,471	120,746	12,371	20,496	21,788	15,504	7,743	7,989	8,269	8,559	8,858	9,168
STP / CMAQ	162,184	57,153	105,032	20,462	3,354	0	7,680	11,600	11,600	12,300	12,300	11,840	13,896
Other Federal	4,141	4,141	0	0	0	0	0	0	0	0	0	0	0
TEA / TLC / TCSP	2,778	2,478	300	300	0	0	0	0	0	0	0	0	0
Subtotal Federal Funding Sources	*1,632,498*	*1,255,803*	*376,695*	*33,133*	*23,851*	*21,788*	*34,671*	*34,846*	*29,361*	*46,969*	*47,483*	*48,354*	*56,241*
			0										
State Funding Sources			0										
Proposition 108	15,000	15,000	0	0	0	0	0	0	0	0	0	0	0
Transit Capital Improvement Program	67,885	67,885	0	0	0	0	0	0	0	0	0	0	0
State Transportation Improvement Program	536,125	467,295	68,830	4,700	0	0	20,400	21,480	3,250	8,500	3,500	3,500	3,500
Other State	1,039,120	97,120	942,000	205,667	86,222	86,222	80,556	80,556	80,556	80,556	80,556	80,556	80,556
Subtotal State Funding Sources	*1,658,129*	*647,299*	*1,010,830*	*210,367*	*86,222*	*86,222*	*100,956*	*102,036*	*83,806*	*89,056*	*84,056*	*84,056*	*84,056*
			0										
Local Funding Sources			0										
Bridge Tolls	275,377	162,150	113,227	2,599	5,124	5,447	8,668	8,712	35,092	11,742	11,871	12,088	11,885
County Transportation Sales Tax	571,930	305,130	266,800	18,660	46,260	46,260	46,260	51,260	38,100	5,000	5,000	5,000	5,000
Other Local	754,610	584,316	170,294	8,581	7,936	7,939	109	113	116	36,369	36,373	36,377	36,380
Subtotal Local Funding Sources	*1,601,917*	*1,051,595*	*550,321*	*29,839*	*59,320*	*59,646*	*55,037*	*60,084*	*73,308*	*53,112*	*53,244*	*53,465*	*53,265*
			0										
BART Funding Sources			0										
1995 Bonds	96,559	93,345	3,214	3,214	0	0	0	0	0	0	0	0	0
1998 Bonds	179,613	176,036	3,577	2,466	1,111	0	0	0	0	0	0	0	0
1999 Bonds	108,945	103,760	5,185	5,185	0	0	0	0	0	0	0	0	0
2000 Bonds	39,000	0	39,000	39,000	0	0	0	0	0	0	0	0	0
SFO CAPRA Bonds	71,700	26,000	45,700	0	45,700	0	0	0	0	0	0	0	0
Interest Earnings	29,555	16,439	13,116	7,599	284	5,233	0	0	0	0	0	0	0
1995 Cross Border Lease	1,019	1,019	0	0	0	0	0	0	0	0	0	0	0
Previous Reserves	101,323	94,151	7,172	6,752	320	100	0	0	0	0	0	0	0
Allocations from Operating Budget	211,623	63,826	147,796	19,801	13,720	12,016	13,372	15,056	12,399	12,727	13,062	17,901	17,743
Other BART	129,693	129,693	0	0	0	0	0	0	0	0	0	0	0
Subtotal BART Funding Sources	*969,028*	*704,268*	*264,760*	*84,017*	*61,135*	*17,349*	*13,372*	*15,056*	*12,399*	*12,727*	*13,062*	*17,901*	*17,743*
			0										
Other Funding Sources			0										
Reimbursement	1,482	1,464	18	18	0	0	0	0	0	0	0	0	0
Private Sector Financing	11,000	11,000	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous Grants	79,213	79,213	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Funding Sources	*91,695*	*91,678*	*18*	*18*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Track One Program	5,953,267	3,750,643	2,202,625	357,373	230,528	185,006	204,035	212,022	198,873	201,863	197,844	203,776	211,305

* Note: all figures in thousands of dollars.

Total Track One Program Funding Sources are identified as committed *as of the date they are available for commitment.*

Track Two Program

	Remaining Requirement
System Reinvestment Program	534,830
Service and Capacity Enhancement Program	1,730,500
System Expansion Program	380,348
Seismic Retrofit Program	610,000
Studies, Research & Development Program	150
Total Track Two Program	**3,255,828**

* Note: all figures in thousands of dollars.

CURRENT AND PLANNED TRACK ONE PROGRAM CAPITAL NEEDS

Current and Planned Track One Program

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
System Reinvestment Program													
Rolling Stock	475,655	370,036	105,619	72,803	22,600	4,600	0	0	0	0	0	0	5,616
Mainline	180,341	34,983	145,358	17,903	12,097	12,939	21,668	12,408	11,487	13,281	13,693	14,120	15,762
Stations	243,264	120,259	123,005	21,901	9,923	13,473	6,845	6,857	6,943	14,032	14,122	8,016	20,893
Controls & Communications	305,753	190,076	115,677	18,585	17,701	7,296	8,020	23,129	7,834	8,056	8,285	8,522	8,248
Facilities	20,534	13,074	7,460	1,340	80	1,080	1,080	1,080	80	80	80	80	2,480
Work Equipment	95,684	20,470	75,214	5,240	7,445	5,180	5,905	8,119	6,375	6,615	6,860	11,605	11,870
Total System Reinvestment Program	*1,321,231*	*748,898*	*572,334*	*137,772*	*69,846*	*44,568*	*43,518*	*51,593*	*32,719*	*42,064*	*43,041*	*42,344*	*64,869*
Seismic Retrofit Program	*222,566*	*9,540*	*213,026*	*211,328*	*1,698*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Service and Capacity Enhancement Program													
Rolling Stock	0	0	0	0	0	0	0	0	0	0	0	0	0
Mainline	0	0	0	0	0	0	0	0	0	0	0	0	0
Stations	134,414	38,838	95,577	11,530	103	106	109	10,613	13,866	12,994	7,998	13,627	24,630
Controls & Communications	116,787	1,187	115,600	0	10,000	10,000	19,600	0	0	25,000	25,000	26,000	0
Facilities	5,880	0	5,880	0	0	0	0	0	5,880	0	0	0	0
Total Service and Capacity Enhancement Program	*257,081*	*40,025*	*217,057*	*11,530*	*10,103*	*10,106*	*19,709*	*10,613*	*19,746*	*37,994*	*32,998*	*39,627*	*24,630*
System Expansion Program													
BART Extension to San Francisco International Airport	1,483,200	1,436,100	47,100	0	47,100	0	0	0	0	0	0	0	0
BART Extension to San Jose - Phase I (Warm Springs - in 1998 $)	393,702	55,350	338,352	0	33,100	33,200	33,100	33,100	60,852	36,250	36,250	36,250	36,250
Oakland Airport Connector (in 1998 dollars)	127,300	4,000	123,300	23,993	20,993	20,993	28,660	28,660	0	0	0	0	0
West Dublin / Pleasanton Infill Station and Transit Village (1)	1,200	1,200	0	0	0	0	0	0	0	0	0	0	0
BART Extension to San Jose - Phase II (Santa Clara)	725,100	0	725,100	100	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556
BART Extension to State Route 4 Corridor	30,000	0	30,000	0	0	0	0	5,000	5,000	5,000	5,000	5,000	5,000
Total System Expansion Program	*2,760,502*	*1,496,650*	*1,263,852*	*24,093*	*181,749*	*134,749*	*142,316*	*147,316*	*146,408*	*121,806*	*121,806*	*121,806*	*121,806*
Studies, Research & Development Program	*30,504*	*12,281*	*18,223*	*18,035*	*63*	*63*	*63*	*0*	*0*	*0*	*0*	*0*	*0*
Total Current and Planned Track One Program	4,591,884	2,307,393	2,284,491	402,759	263,458	189,485	205,606	209,522	198,873	201,863	197,845	203,776	211,305

* Note: all figures in thousands of dollars.

(1) The remainder of the project is still under negotiation with BART's funding and development partners.

System Reinvestment Program

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Rolling Stock	475,655	370,036	105,619	72,803	22,600	4,600	0	0	0	0	0	0	5,616
Mainline	180,341	34,983	145,358	17,903	12,097	12,939	21,668	12,408	11,487	13,281	13,693	14,120	15,762
Stations	243,264	120,259	123,005	21,901	9,923	13,473	6,845	6,857	6,943	14,032	14,122	8,016	20,893
Controls & Communications	305,753	190,076	115,677	18,585	17,701	7,296	8,020	23,129	7,834	8,056	8,285	8,522	8,248
Facilities	20,534	13,074	7,460	1,340	80	1,080	1,080	1,080	80	80	80	80	2,480
Work Equipment	95,684	20,470	75,214	5,240	7,445	5,180	5,905	8,119	6,375	6,615	6,860	11,605	11,870
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Total System Reinvestment Program	1,321,231	748,898	572,334	137,772	69,846	44,568	43,518	51,593	32,719	42,064	43,041	42,344	64,869

* Note: all figures in thousands of dollars.

Rolling Stock

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
A and B Car Comprehensive Renovation	454,400	355,036	99,364	72,164	22,600	4,600							
C1 Car Midlife Overhaul	15,375	15,000	375	375									
C2 Car Floor Panel Installation	264		264	264									
Car Anti-Climbers	5,616		5,616										5,616
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Total Rolling Stock	475,655	370,036	105,619	72,803	22,600	4,600	0	0	0	0	0	0	5,616

* Note: all figures in thousands of dollars.

Mainline

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Berkeley Hills Tunnel Doors	375		375	375									
Blast Damper Retrofit	365	365	0										
Emergency Mainline Repairs	17,953		17,953	3,849	2,104	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Emergency Standby Power	1,776	1,776	0										
Future Repaint Steel Girders for Corrosion Protection	1,200		1,200										1,200
Lake Merritt Channel Subway Repair	2,400		2,400				2,400						
Replace Running Rail and Accessories	52,949	16,698	36,251	3,158	3,240	3,324	3,410	3,529	3,653	3,781	3,913	4,050	4,192
Replace Traction Power House Roofs	344	344	0										
Right-of-Way Fencing	508	508	0										
Traction Power Equipment Renovation	90,322	15,292	75,030	4,371	6,753	8,115	8,358	7,379	6,334	8,000	8,280	8,570	8,870
Transbay Tube and Tunnel Ventilation	6,000		6,000	6,000									
Transbay Tube Cathodic Corrosion Protection	6,150		6,150	150			6,000						
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Total Mainline	180,341	34,983	145,358	17,903	12,097	12,939	21,668	12,408	11,487	13,281	13,693	14,120	15,762

* Note: all figures in thousands of dollars.

Stations

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Automatic Fare Collection Equipment Modernization / Translink	82,776	55,451	27,325	7,040	5,435	10,780	4,071						
Bay Point Station Phone System	48	48	0										
Energy Conservation at Embarcadero Station	1,616	1,598	18	18									
Fire Protection for Daly City Station Bicycle Lockers	25	25	0										
Future General Station Renovation Program	34,800		34,800					4,000	4,000	11,000	11,000	4,800	
Future Station Reroofing	6,750		6,750										6,750
General Station Renovation Program at Four Stations	5,945	4,977	968	968									
Interim AFC Equipment Upgrades	4,320	4,320	0										
Modify Change Machines	925	925	0										
Rehabilitate West Oakland Lintel Structures	1,000	1,000	0										
Relamp Station Parking Facilities	3,348		3,348	300	300	309	318	328	338	348	358	369	380
Relamp Stations	4,185		4,185	375	375	386	398	410	422	435	448	461	475
Repaint Stations	6,095		6,095		600	618	637	656	675	696	716	738	760
Repair and Replace Stair Tread Edges and Anti-Slip Treatments	3,600		3,600										3,600
Replace and Rehabilitate Escalators and Elevators	52,343	50,843	1,500	1,500									
Replace Bus Transfer Ticket Machines	922	922	0										
Replace Destination Signs	9,926		9,926	8,053	1,873								
Replace Platform Edge Detectable Warning Treatment	2,847		2,847	2,847									
Replace Station Public Address System	7,230		7,230										7,230
Reroof Station Canopy Roofs	5,486		5,486		540	556	573	590	608	626	645	664	684
Resurface Parking Lot Pavement	8,927		8,927	800	800	824	849	874	900	927	955	984	1,013
Video Cameral Surveillance Upgrades	150	150	0										
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Total Stations	243,264	120,259	123,005	21,901	9,923	13,473	6,845	6,857	6,943	14,032	14,122	8,016	20,893

* Note: all figures in thousands of dollars.

Controls & Communications

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Advanced Automatic Train Control (AATC) Phases I-III	105,950	85,367	20,583	9,821	10,762								
Augmentation of Police Radio Coverage	144	144	0										
Computer Aided Dispatch and Record Management System (Police)	2,552	452	2,100	2,100									
Emergency Controls & Communications	12,791		12,791		1,311	1,500	1,500	1,500	1,500	1,500	1,500	1,500	980
Fiber Optic / Radio Telecommunications Network (TRACS)	67,184	67,184	0										
Integrated Computer System	900		900	900									
NXTGen Program	19,762	19,762	0										
Replace Original DTS Data Communications System Equipment	7,000	1,000	6,000					6,000					
Replacement of Interlocking Relay-based Logic w/ Microprocessor	0		0										
Replacement of Yard Voice Recorders	600		600					600					
Richmond and Daly City Yard and Console Replacement	2,880		2,880					2,880					
Upgrade Telecommunications Switches	300		300	300									
Wayside Train Control Equipment Renovation	79,140	16,167	62,973	5,464	5,628	5,796	5,970	6,149	6,334	6,556	6,785	7,022	7,268
Wayside Wiring for Interlocking - Replace Underground	6,000		6,000					6,000					
Yard Cable Plant Replacement	550		550				550						
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Total Controls & Communications	305,753	190,076	115,677	18,585	17,701	7,296	8,020	23,129	7,834	8,056	8,285	8,522	8,248

* Note: all figures in thousands of dollars.

Facilities

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Daly City Yard and Shop Improvements	960		960	960									
Employee Facilities Improvements	1,000	1,000	0										
Hayward Stores Roofing	300		300	300									
Hayward Training Classrooms and Virtual Railty	220	220	0										
MetCenter Capital Reserve	1,197	397	800	80	80	80	80	80	80	80	80	80	80
Reconfigure and Renovate Transportation Buildings at Yards	3,395	3,395	0										
Renovation of Hayward Yard Train Washer Facility	4,200	4,200	0										
Renovation of Richmond Yard Train Washer Facility	3,862	3,862	0										
Reroofing at the Shops and Other District Facilities	5,400		5,400			1,000	1,000	1,000					2,400
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Total Facilities	20,534	13,074	7,460	1,340	80	1,080	1,080	1,080	80	80	80	80	2,480

* Note: all figures in thousands of dollars.

Work Equipment

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Maintenance and Engineering Equipment	2,363	988	1,375	115	120	125	130	135	140	145	150	155	160
Non-Operations Departments Equipment	1,159	334	825	60	65	70	75	80	85	90	95	100	105
Non-Revenue Vehicles	41,912	12,102	29,810	2,330	2,470	2,610	2,750	2,900	3,050	3,200	3,350	3,500	3,650
Non-Stock Inventory (repairable parts provisioning)	29,641	6,762	22,879	175	2,225	2,305	2,375	2,424	2,515	2,590	2,670	2,750	2,850
Other Operations Departments Equipment	1,109	284	825	60	65	70	75	80	85	90	95	100	105
Spare Parts	19,500		19,500	2,500	2,500		500	2,500	500	500	500	5,000	5,000
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Total Work Equipment	95,684	20,470	75,214	5,240	7,445	5,180	5,905	8,119	6,375	6,615	6,860	11,605	11,870

* Note: all figures in thousands of dollars.

Seismic Retrofit Program

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Caltrans Local Seismic Retrofit Program	221,326	8,300	213,026	211,328	1,698								
General Obligation Bond Election	1,240	1,240	0										
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Total Seismic Retrofit Program	222,566	9,540	213,026	211,328	1,698	0	0	0	0	0	0	0	0

* Note: all figures in thousands of dollars.

Service and Capacity Enhancement Program

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Rolling Stock	0	0	0	0	0	0	0	0	0	0	0	0	0
Mainline	0	0	0	0	0	0	0	0	0	0	0	0	0
Stations	134,414	38,838	95,577	11,530	103	106	109	10,613	13,866	12,994	7,998	13,627	24,630
Controls & Communications	116,787	1,187	115,600	0	10,000	10,000	19,600	0	0	25,000	25,000	26,000	0
Facilities	5,880	0	5,880	0	0	0	0	0	5,880	0	0	0	0
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Total Service and Capacity Enhancement Program	257,081	40,025	217,057	11,530	10,103	10,106	19,709	10,613	19,746	37,994	32,998	39,627	24,630

* Note: all figures in thousands of dollars.

CURRENT AND PLANNED TRACK ONE PROGRAM – Service and Capacity Enhancement Program

Rolling Stock

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
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Total Rolling Stock	0	0	0	0	0	0	0	0	0	0	0	0	0

* Note: all figures in thousands of dollars.

Mainline

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
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Total Mainline	0	0	0	0	0	0	0	0	0	0	0	0	0

* Note: all figures in thousands of dollars.

Stations

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Systemwide Projects													
ADA Key Station Parking Modifications	1,350	1,350	0										
Automatic Fare Collection Equipment Capacity Expansion	36,000		36,000						3,250	7,875	7,875	13,500	3,500
Bicycle Access Program	2,883	1,737	1,146	100	103	106	109	113	116	119	123	127	130
"CarLink" Station Cars Demonstration	1,440	1,440	0										
Intermodal Access Program / Transit Centers	10,305	10,305	0										
Miscellaneous Bathroom Remodeling	506	506	0										
Pathfinder Sign Program Prototype	312	312	0										
Stations Security Program	42,000		42,000					10,500	10,500				21,000
Unassigned Capital Need	1,300	1,300	0										
Station-Specific Projects													
16th Street Mission Station Southwest Plaza	1,958	1,958	0										
Balboa Park Station BART/Muni Pedestrian Access & Accessibility	710		710	710									
Balboa Park Station Expansion Study	200		200	200									
BART-SFO Extension Colma-Millbrae Bikeway & Daly City Stn	1,700		1,700	1,700									
Bayfair Access and Station Area Improvements	0		0										
Coliseum Station Accessibility Improvements	760	760	0										
Concord Access and Station Area Improvements	0		0										
Dublin/Pleasanton Station Access and Transit Village	5,000		5,000							5,000			
El Cerrito del Norte Station Accessible Parking and Path Improv.a	0		0										
El Cerrito Plaza Access and Station Area Improvement	5,500		5,500	5,500									
Fruitvale Transit Village	16,535	15,551	984	984									
Glen Park Station Accessibility Improvements	204		204	204									
Lafayette Accessibility and Station Area Improvements	725		725	725									
MacArthur Station Elevator Replacement	2,407	1,957	450	450									
Muni Fast Pass Turnstiles in San Francisco Stations	957		957	957									
Ogawa Plaza Project	251	251	0										
Pittsburg / Bay Point Parking Structure	1,412	1,412	0										
Richmond Access and Station Area Improvements	0		0										
	0		0										
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	0		0										
	0		0										
	0		0										
Total Stations	134,414	38,838	95,577	11,530	103	106	109	10,613	13,866	12,994	7,998	13,627	24,630

* Note: all figures in thousands of dollars.

Controls & Communications

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Installation of AATC on Remiander of Core – Phase IV	106,000		106,000		10,000	10,000	10,000			25,000	25,000	26,000	
Operations Computer Replacement	9,600		9,600				9,600						
Replace and Add Second Communications Specialist Workstation	1,187	1,187	0										
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Total Controls & Communications	116,787	1,187	115,600	0	10,000	10,000	19,600	0	0	25,000	25,000	26,000	0

* Note: all figures in thousands of dollars.

Facilities

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Hayward Shop Lifts	5,880		5,880						5,880				
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Total Facilities	5,880	0	5,880	0	0	0	0	0	5,880	0	0	0	0

* Note: all figures in thousands of dollars.

System Expansion Program

	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
BART Extension to San Francisco International Airport	1,483,200	1,436,100	47,100		47,100								
BART Extension to San Jose - Phase I (Warm Springs - in 1998 $)	393,702	55,350	338,352		33,100	33,200	33,100	33,100	60,852	36,250	36,250	36,250	36,250
Oakland Airport Connector (in 1998 dollars)	127,300	4,000	123,300	23,993	20,993	20,993	28,660	28,660					
West Dublin / Pleasanton Infill Station and Transit Village [1]	1,200	1,200	0										
BART Extension to San Jose - Phase II (Santa Clara)	725,100		725,100	100	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556	80,556
BART Extension to State Route 4 Corridor	30,000		30,000					5,000	5,000	5,000	5,000	5,000	5,000
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Total System Expansion Program	**2,760,502**	**1,496,650**	**1,263,852**	**24,093**	**181,749**	**134,749**	**142,316**	**147,316**	**146,408**	**121,806**	**121,806**	**121,806**	**121,806**

* Note: all figures in thousands of dollars.

A substantial portion of BART's Phase 1 Extension Program is nearing completion. These projects are listed in Tier One to identify funding that is needed to complete them. Investment in system expansion beyond the Phase 1 Extension Program will be guided by BART's System Expansion Policy Framework, recently adopted in November 1999. Under this policy framework, BART will engage in strategic opportunities assessments prior to making system expansion investment decisions.

[1] The remainder of the project is still under negotiation with BART's funding and development partners.

Studies, Research & Development Program	Total Commitments	Commitments to FY00	Future Commitments	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY010
Automatic Fare Collection Capacity Expansion Study	500	500	0										
BART to San Jose Feasibility Study	0		0										
Joint Development Positions	1,998	1,823	175	175									
Long Range Studies	4,388	4,388	0										
Research & Development Program	1,762	1,262	500	500									
Seismic Vulnerability Study	2,000	2,000	0										
Strategic Opportunities Assessments	17,000		17,000	17,000									
Superconducting Magnetic Energy Storage	468	468	0										
System Access Studies and Monitoring	1,228	1,040	188		63	63	63						
System Capacity Study	300	300	0										
System Expansion Study	500	500	0										
Translink Analysis	360		360	360									
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Total Studies, Research & Development Program	30,504	12,281	18,223	18,035	63	63	63	0	0	0	0	0	0

* Note: all figures in thousands of dollars.

COMPLETED TRACK ONE PROGRAM CAPITAL NEEDS

Completed Track One Program

	Total Commitments
System Reinvestment Program	
Rolling Stock	10,303
Mainline	30,270
Stations	36,124
Controls & Communications	9,180
Facilities	8,310
Work Equipment	4,776
Total System Reinvestment Program	*98,963*
Seismic Retrofit Program	*0*
Service and Capacity Enhancement Program	
Rolling Stock	0
Mainline	0
Stations	20,680
Controls & Communications	0
Facilities	4,925
Total Service and Capacity Enhancement Program	*25,605*
System Expansion Program	
Colma Extension	180,000
Dublin/Pleasanton Extension	546,000
Pittsburg/Bay Point Extension	508,000
Total System Expansion Program	*1,234,000*
Studies, Research & Development Program	*2,816*
Total Completed Track One Program	**1,361,384**

* Note: all figures in thousands of dollars.

System Reinvestment Program

	Total Commitments
Rolling Stock	10,303
Mainline	30,270
Stations	36,124
Controls & Communications	9,180
Facilities	8,310
Work Equipment	4,776
Total System Reinvestment Program	**98,963**

* Note: all figures in thousands of dollars.

Rolling Stock

	Total Commitments
Replace A and B Car Door Components	4,688
Replace Batteries on A, B and C1 Cars	1,834
Replace Electrical Couplers on C1 Cars	2,068
Wheel Upgrade Program	1,714
Total Rolling Stock	**10,303**

* Note: all figures in thousands of dollars.

Mainline

	Total Commitments
Asbestos Abatement	4,243
Berkeley Hills Tunnel Fire Protection Modifications	1,895
Caltrans Reimbursable Projects	4,396
Recoat Tunnel Liner Rings for Corrosion Protection	586
Rehabilitate Subway Ventilation Line Fans	1,337
Repaint Structural Girders and Bridges	2,012
Replace Dry with Wet Standpipes	8,927
Replace Sump Pumps in Subway Tunnels	3,306
Track Embankment Upgrade	240
Transbay Tube Cathodic Corrosion Protection	3,328
Total Mainline	**30,270**

* Note: all figures in thousands of dollars.

Stations

	Total Commitments
Accessible Automatic Fare Collection Equipment	1,500
Credit-Debit Vendors	3,411
Development of Bill-to-Bill Changer Prototype	70
Fire Mains Replacement at Fremont / Oakland Line	250
General Station Renovation at Eight Stations	16,649
MacArthur Station Emergency Exit Upgrade	364
Modifications to Cubic Faregates	772
Refurbish and Install In-Storage Faregate Units	1,065
Repair Concrete Roof of Lake Merritt Station	215
Repair Platform Sub-Surfaces at Various Stations	1,331
Repair Stair Tread Edges and Replace Anti-Slip Treatments	7
Replace Four Embarcadero Station Elevators	2,777
Replace Maps and Signs in Stations	1,390
Replace Agent Ticket Readers	330
Replace Station Fire Alarms	350
Replace Station Roofing	851
Replace Ten Elevator Floors	510
Stations Security Program	4,248
Security Gates Replacement at South Hayward and Other Stations	34
Total Stations	**36,124**

* Note: all figures in thousands of dollars.

Controls & Communications

	Total Commitments
Cash Handling Improvements	1,207
Comspec Position in Central	350
Emergency Control Center Back Up	29
MIS Mainframe Computer	600
Replace MARIS	1,615
Replace Maintenance Vehicle Detection Devices	373
Replace MetroVision Sign Units	1,300
Reverse Running in Transbay Tube	180
Train Identification Enhancement	1,580
Yard Train Control Improvements	1,946
Total Controls & Communications	9,180

* Note: all figures in thousands of dollars.

Facilities

	Total Commitments
1000V Power Supplies	70
Cash Handling Building Security Improvements	19
Central Receiving and Distribution Facility	10
Concord and Richmond Yard Track Crossings	360
Fire Main Replacement at Hayward Yard	172
Hayward Test Track Security Alarm	97
Hayward Tower Renovation	57
Metro Center Building Fuel Tank	675
Oil and Water Separators at Richmond and Hayward Shops	136
Replace Dust Collector Systems at Richmond and Concord Shops	1,641
Replace Parts Washing Facilities in All Shops	550
Richmond Shop Roof Repairs	73
Richmond Yard Efficiency Improvements	353
Wheel Press at Hayward Shop	544
Wheel Truing Machines	3,519
Yard Fuel Tanks	35
Total Facilities	**8,310**

* Note: all figures in thousands of dollars.

Work Equipment

	Total Commitments
ADA Equipment	350
Computer and Network-related Equipment	3,283
Currency Counter	1,000
Miscellaneous Equipment	143
Total Work Equipment	4,776

* Note: all figures in thousands of dollars.

Seismic Retrofit Program

	Total Commitments
Total Seismic Retrofit Program	0

* Note: all figures in thousands of dollars.

Service and Capacity Enhancement Program

	Total Commitments
Rolling Stock	0
Mainline	0
Stations	20,680
Controls & Communications	0
Facilities	4,925
Total Service and Capacity Enhancement Program	**25,605**

* Note: all figures in thousands of dollars.

Rolling Stock

	Total Commitments
Total Rolling Stock	0

* Note: all figures in thousands of dollars.

Mainline

	Total Commitments
Total Mainline	0

* Note: all figures in thousands of dollars.

Stations

	Total Commitments
ADA Key Station Informational Signage	852
AFC Swing Gates Installation	350
Anti-Graffiti / Vandalism Program	580
Bathroom and Elevator Directional Signs	200
Bathroom Barrier Removal	425
Electronic Elevator Signs Installation	700
Intermodal Access Program / Transit Centers	15,102
Key Station ADA 12th Street Elevator Replacement	859
Non-Key Station Parking Modifications	733
Pleasant Hill Park and Ride for I-680 / 24 Mitigation	879
Total Stations	**20,680**

* Note: all figures in thousands of dollars.

Controls & Communications

	Total Commitments
Total Controls & Communications	0

* Note: all figures in thousands of dollars.

Facilities

	Total Commitments
Hayward Shop Traction Motor Repair Facility	3,155
Richmond Shop and Yard Security Enhancement	1,770
Total Facilities	**4,925**

* Note: all figures in thousands of dollars.

System Expansion Program

	Total Commitments
Colma Extension	180,000
Dublin/Pleasanton Extension	546,000
Pittsburg/Bay Point Extension	508,000
Total System Expansion Program	**1,234,000**

* Note: all figures in thousands of dollars.

Studies, Research & Development Program

	Total Commitments
Adaptive Diagnostic Systems	123
Caltrans Seismic Study	336
Electric Vehicle Charging Kiosk Demonstration	1,100
Sound Mitigation / Noise Reduction Program	350
Station Capacity Study	784
Wheel / Rail Maintenance Study	123
Total Studies, Research & Development Program	**2,816**

* Note: all figures in thousands of dollars.

TRACK TWO PROGRAM
CAPITAL NEEDS

Track Two Program

	Remaining Requirement
System Reinvestment Program	534,830
Service and Capacity Enhancement Program	1,730,500
System Expansion Program	380,348
Seismic Retrofit Program	610,000
Studies, Research & Development Program	150
Total Track Two Program	**3,255,828**

* Note: all figures in thousands of dollars.

System Reinvestment Program

	Remaining Requirement
Rolling Stock	339,000
Mainline	2,844
Stations	89,948
Controls & Communications	29,320
Facilities	33,718
Work Equipment	40,000
Total System Reinvestment Program	**534,830**

* Note: all figures in thousands of dollars.

Rolling Stock

	Remaining Requirement
Tier One	
Fleet Upgrades	18,000
Vehicle Automatic Train Control Equipment	TBD
Tier Two	
C1 Car Comprehensive Renovation	318,000
Car Door Closing Indicating Lights	TBD
Tier Three	
Tier Four	
Install Automatic Train Control Restoration Units (ARU)	3,000
Total Rolling Stock	**339,000**

* Note: all figures in thousands of dollars.

Mainline

	Remaining Requirement
Tier One	
Tier Two	
Rehabilitate Line Vent Fans in San Francisco Tunnels	TBD
Tier Three	
Replacement of Dry Standpipes At I-680 and Springbrook Crossings	444
Remove Emergency Handrail Gaps and Walkway Obstructions	2,400
Tier Four	
Total Mainline	2,844

* Note: all figures in thousands of dollars.

Stations

	Remaining Requirement
Tier One	
Emergency Egress Lighting Rehailitation	TBD
Fire Suppression Equipment in San Francisco Stations	TBD
Station Egress	29,000
Tier Two	
Elevator Cameras	
Future General Station Renovation	15,000
Replace Grille Doors at Contra Costa and San Francisco Stations	TBD
Replacement of North Berkeley Station Ceiling	1,284
Replace Platform Edge Detectable Warning Treatment	4,800
Replacement or Renovation of Garage and Other Elevators	3,600
Tier Three	
Additional AFC Upgrades	5,496
Automatic Fare Collection Equipment Ticket Media / Print Technology	TBD
Future Energy Conservation	25,428
Remote Monitoring for Escalators & Elevators at Extensions Stns	540
Replace Closed Circuit Television Security	TBD
Replacement of Hydraulic Lift Cylinders	4,800
Replace Yard Public Address System	TBD
Tier Four	
Fire Protection for 232 Bicycle Lockers	TBD
Total Stations	89,948

* Note: all figures in thousands of dollars.

Controls & Communications

	Remaining Requirement
Tier One	
Integrated Computer System	2,600
Network Equipment Modernization and Upgrade	20,000
Tier Two	
Business Systems Modernization and Upgrade	TBD
HVAC Improvements at Montgomery Station Train Control Room	TBD
Tier Three	
Replace District Telephone Systems	4,800
Install New Yards, Shops & Towers Systems	1,920
Tower Voice Recorders	TBD
Tier Four	
Replace Operating System Computer Hardware	TBD
Total Controls & Communications	**29,320**

* Note: all figures in thousands of dollars.

Facilities

	Remaining Requirement
Tier One	
Fire Alarm Procurement and Installation at Madison Square Office	250
Tier Two	
Rehabilitation of TransBay Tube Facility	1,200
Renovation of Concord Yard Train Washer Facility	4,200
Additional Storage Facilities	9,720
Tier Three	
Relamping at Shops and Yards	TBD
Replace Yard Disconnect Enclosures	744
Overhead Cranes Renovation at Shops	2,400
Facility Painting and Repair	2,400
Shop Roll Up Door Replacement	1,500
Recondition Shop/Yard Sump Pumps	312
Oakland Shop Fuel Facility Replacement	1,200
Resurfacing of Roads and Parking Lots	TBD
Tier Four	
Train Operator Training Simulator	1,200
Lake Merritt Building Renovation	8,400
Lighting and Office at Richmond Shop	TBD
Replace Grease/Oil Facilities	192
Replacement and Renovation of Storage Area Canopy	TBD
Replace Maintenance Pit Lighting	TBD
Transbay Tube Upper Gallery Lighting	TBD
Yard Lamp Pole Retrofit	TBD
Office Consolidation	TBD
Total Facilities	33,718

* Note: all figures in thousands of dollars.

Work Equipment

	Remaining Requirement
Tier One	
Tier Two	
Spare Parts	10,000
Tier Three	
Computer and Network-related Equipment	30,000
Tier Four	
Total Work Equipment	**40,000**

* Note: all figures in thousands of dollars.

Seismic Retrofit Program

	Remaining Requirement
Tier One	
Segment III – Core System Retrofit Program	295,000
Tier Two	
Tier Three	
Segment IV – Structures and Stations Program	185,000
Segment V – Other BART Structures	130,000
Tier Four	
Total Seismic Retrofit Program	**610,000**

* Note: all figures in thousands of dollars.

Service and Capacity Enhancement Program

	Remaining Requirement
Rolling Stock	640,000
Mainline	240,000
Systemwide Stations	309,375
Controls & Communications	285,705
Facilities	255,420
Total Service and Capacity Enhancement Program	**1,730,500**

* Note: all figures in thousands of dollars.

Rolling Stock

	Remaining Requirement
Tier One	
Tier Two	
Tier Three	
Tier Four	
Additional Car Procurement	400,000
Other Rolling Stock System Capacity Capital Needs	240,000
Total Rolling Stock	**640,000**

* Note: all figures in thousands of dollars.

Mainline

	Remaining Requirement
Tier One	
Tier Two	
Tier Three	
Tier Four	
Other Mainline System Capacity Capital Needs	240,000
Total Mainline	240,000

* Note: all figures in thousands of dollars.

Systemwide Stations

	Remaining Requirement
Tier One	
Automatic Fare Collection Equipment Expansion	69,000
Bicycle Access Program	TBD
Intermodal Access Program / Transit Centers	TBD
Pedestrian Access Program	TBD
Station Egress and Vertical Circulation Improvements	TBD
Tier Two	
Future System Access Planning and Monitoring	375
Installation of Hands Free Emergency Telephones in Elevators	TBD
Systemwide Accessible Drop-off / Intermodal Improvements	TBD
Tier Three	
Accessible Parking and Path Improvements at Stations	TBD
Braille Directional Signage at Extension and Non-Key Stations	TBD
Parking System Equipment Procurement and Installation	TBD
Pathfinder Sign Program	TBD
Real Time Travel Information	TBD
Systemwide Accessible Directional Signage	TBD
Tier Four	
Systemwide Other Accessibility Improvements	TBD
Other Stations System Capacity Capital Needs	240,000
Total Systemwide Stations	**309,375**

* Note: all figures in thousands of dollars.

Stations

	Remaining Requirement
12th Street Station Access and Station Area Improvements	TBD
16th Street Mission Station Northeast Plaza Station Area Dev't	2,500
19th Street Station Access and Station Area Improvements	TBD
24th Street Mission Station Area Development	5,000
Ashby / Ed Roberts Campus Project	TBD
Balboa Park Station Ocean Avenue Entrance	TBD
Bay Fair Station Access and Station Area Improvements	TBD
Berkeley Station Access and Station Area Improvements	TBD
Castro Valley Station Access and Station Area Improvements	TBD
Civic Center Station Access and Station Area Improvements	TBD
Coliseum Station Access and Station Area Improvements	TBD
Colma Station Access and Station Area Improvements	TBD
Concord Station Access and Station Area Improvements	TBD
Daly City Station Access and Station Area Improvements	TBD
Dublin / Pleasanton Station Access and Station Area Improvements	TBD
El Cerrito del Norte Station Access and Station Area Improvements	TBD
El Cerrito Plaza Station Access and Station Area Improvements	TBD
Embarcadero Station Queuing Area Expansion	TBD
Fremont Station Access and Station Area Improvements	TBD
Fruitvale Station Access and Station Area Improvements	TBD
Glen Park Station Second Entry	TBD
Hayward Station Access and Station Area Improvements	TBD
Lafayette Station Access and Station Area Improvements	TBD
MacArthur Station Station Area Improvements	TBD
Montgomery Street Station Access and Station Area Improvements	TBD
North Berkeley Station Accessible Parking Improvements	TBD
Oakland Coliseum Station Access and Station Area Improvements	TBD
Orinda Station Access and Station Area Improvements	TBD
Pittsburg / Bay Point Station Access and Station Area Improvements	TBD
Pleasant Hill Station Access and Station Area Improvements	TBD
Powell Street Station Access and Station Area Improvements	TBD
Richmond Station Access and Station Area Improvements	TBD
Richmond Transit Village	TBD
Rockridge Station Access and Station Area Improvements	TBD
San Leandro Station Access and Station Area Improvements	TBD
South Hayward Station Access and Station Area Improvements	TBD
Union City Station Access Improvements	TBD
Walnut Creek Station Access and Station Area Improvements	TBD
West Oakland Station Access and Station Area Improvements	TBD
Total Stations	**7,500**

Controls & Communications

	Remaining Requirement
Tier One	
Tier Two	
Tier Three	
Installation of AATC at Extension Stations – Phase V	32,400
Automatic Vehicle Identification Readers	13,305
Tier Four	
Other Controls & Communications System Capacity Capital Needs	240,000
Total Controls & Communications	**285,705**

* Note: all figures in thousands of dollars.

Facilities

	Remaining Requirement
Tier One	
Tier Two	
Additional Storage Facilities	9,720
Tier Three	
Hayward Training Center Expansion	4,500
Tier Four	
Train Operator Training Simulator	1,200
Other Facilities Ssytem Capacity Capital Needs	240,000
Total Facilities	**255,420**

* Note: all figures in thousands of dollars.

System Expansion Program

	Remaining Requirement
Phase 1	
BART Extension to San Jose – Phase I (Warm Springs - in $1998)	207,648
Oakland Airport Connector (in $1998)	2,700
Other System Expansion	
BART Extension to I-580 / Livermore Corridor	TBD
BART Extension to State Route 4 Corridor	170,000
BART Extension to West Contra Costa County Corridor	TBD
30th Street Mission Station	TBD
BART Extension to San Jose – Phase II (Santa Clara)	TBD
Commuter Rail System	TBD
Total System Expansion Program	**380,348**

* Note: all figures in thousands of dollars.

A substantial portion of BART's Phase 1 Extension Program is nearing completion. These projects are listed in Phase 1 to identify funding that is needed to complete them. Investment in system expansion beyond the Phase 1 Extension Program will be guided by BART's System Expansion Policy Framework, recently adopted in November 1999. Under this policy framework, BART will engage in strategic opportunities assessments prior to making system expansion investment decisions.

Studies, Research & Development Program

	Remaining Requirement
Tier One	
Tier Two	
Tier Three	
Platform Noise Reduction Study	150
Tier Four	
Total Studies, Research & Development Program	**150**

* Note: all figures in thousands of dollars.

Appendix: Funding Sources

BART-ELIGIBLE FUND SOURCES

FEDERAL FUNDING CATEGORIES

Category	Approximate Annual Funding (Bay Area)	Eligible Uses	Who can claim the money?	Who decides which projects get the money?
Federal Transit Act Section 5307 - Formula Funds	$156 million	• Purchase of buses, trains, ferries, vans and support equipment • Americans With Disabilities Act - required paratransit service	Public Transit Operators	MTC
Federal Transit Act Section 5309 - Fixed Guideway	$78 million	• Purchase of rail cars, ferries and equipment	Public transit operators	MTC
Federal Transit Act Section 5309 - New Starts	Discretionary - varies annually	• New rail systems and line extensions	Public transit operators	Congress
Surface Transportation Program (STP)	$57 million	• Roadway or transit rehabilitation • Transportation system operational improvements • Highway construction • Transit facilities • Intermodal port facilities	Public agencies - cities, counties, transit operators, Caltrans	MTC
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	$57 million	• Transportation projects that improve air quality	Public agencies - cities, counties, transit operators, Caltrans	MTC
Transportation Enhancement Activities (TEA)	$4 million	• Bicycle, pedestrian, transit, landscaping, public art or historic projects linked to transportation	Public agencies - cities, counties, transit operators, Caltrans	MTC and CMAs (CTC for statewide projects)
Access to jobs and Reverse Commute Program	Discretionary - varies annually	• Projects and services designed to transport low-income persons to work; projects to move people to suburban job centers	Local governments, metropolitan planning organizations, transit operators and non-profit organizations	U.S. DOT
Transportation for Livable Communities (TLC)	$9 million	• Bicycle, pedestrian, transit or other projects that enhance community vitality, including planning studies	Public agencies - cities, counties, transit operators; also non-profit organizations	MTC
Transportation Community and System Preservation Pilot Program	Discretionary - varies annually	• Transit-oriented development projects, traffic-calming measures, other projects to reduce need for future infrastructure investments	State and local governments, metropolitan planning organizations	U.S. DOT / Congress
Federal Department of Labor	TBD			Federal Department of Labor
Federal Emergency Management Agency (FEMA)	TBD			Federal Emergency Management Agency (FEMA)

STATE FUNDING CATEGORIES

Category	Approximate Annual Funding (Bay Area)	Eligible Uses	Who can claim the money?	Who decides which projects get the money?
Regional Improvement Program (STIP)	$110 million	• Construction of carpool lanes • Freeway interchanges • Rail extensions • Rail grade separations • Intermodal freight facilities • Upgraded transit stations and vehicles • Road rehabilitation	Public agencies - cities, counties, transit operators, Caltrans	MTC
Interregional Improvement Program (ITIP)	Discretionary - varies annually	• Intercity rail, interregional road or rail expansion projects outside urban areas or projects of statewide significance	Public agencies - cities, counties, transit operators, Caltrans	Caltrans / CTC
Caltrans Local Seismic Retrofit Program	TBD	• Seismic retrofit construction.		Caltrans
State Transit Assistance - Revenue Based	$27 million	• Transit and paratransit operating assistance, regional transit coordination	Public transit operators	Transit operators
State Transit Assistance - Population Based	$10 million	• Transit and paratransit operating assistance, capital projects, and regional transit coordination	Public transit operators, MTC	Transit operators, MTC
State Budget Appropriations	TBD		Public agencies in the State	State Governor, Senate and Assembly

LOCAL FUNDING CATEGORIES

Category	Approximate Annual Funding (Bay Area)	Eligible Uses	Who can claim the money?	Who decides which projects get the money?
Gas Tax Subventions	$130 million	• Local street and road maintenance and rehabilitation	Cities and counties	Cities and counties
Transportation Development Act (TDA) Articles 4 and 8 (1/4-cent sales tax)	$294 million	• Transit operating assistance and capital projects; if there are no unmet transit needs, then local street and road maintenance and rehabilitation projects are eligible	Public transit operators; cities and counties	MTC
TDA Article 4.5	$12 million	• Paratransit operating assistance and capital projects	Cities and counties	MTC
Bridge Tolls (Base toll, state-owned bridges)	$135 million	• Maintenance and operation of state-owned toll bridges (not the Golden Gate) • Voter-approved Regional Measure 1 projects to relieve traffic congestion in bridge corridors (bridge and approach improvements) • Ferry operations and improvements • Transit services • Bicycle and pedestrian routes	Caltrans, cities, counties, public transit operators, Association of Bay Area Governments	BATA / MTC
Bridge Toll Seismic Retrofit Surcharge (New $1 surcharge on state-owned bridges)	$115 million	• Earthquake retrofit of state-owned Bay Area toll bridges and traffic mitigation projects related to retrofit work	Caltrans	Caltrans
Transportation Fund for Clear Air (TFCA) $4 Vehicle Registratioan Fee	$20 million	• Ridesharing, clean fuel buses, alternative fuel vehicle demonstrations, shuttles, traffic management, rail/bus integration, regional transit information, bicycle programs, implementation of smoking vehicle program	Public agencies - public transit agencies, MTC, cities, counties, school districts, Caltrans	BAAQMD (60%); CMAs (40%)
AB 1107 Permanent 1/2¢ Sales Tax for Transit in Alameda, San Francisco and Contra Costa Counties	$217 million	• BART, AC Transit and San Francisco Muni transit capital and operations	BART (75%), AC Transit, San Francisco Muni and BART (25%)	BART (75%) MTC (25%)
Alameda County Measure B (expires 2002) 1/2¢	$82 million	• 19% to local streets and roads, 11.6% to AC Transit, 1.5% to paratransit; balance to capital highway improvements	Caltrans, county, cities, BART, AC Transit	Voter-approved program administered by ACTA
Contra Costa County Measure C (expires 2008) 1/2¢ Sales Tax	$53 million	• 41% to highways, 28% to transit, 0.4% to trails, and 30% to other programs	County, cities, BART, Caltrans	Voter-approved program administered by CCTA
San Francisco City/County Proposition B (expires 2009) 1/2¢ Sales Tax	$60 million	• 60% to transit, 30% to streets & traffic safety, 8% to paratransit, and 2% to transportation system management	Muni, departments of public works, public transportation, parking and traffic, and city planning	Voter-approved program administered by SFCTA
San Mateo County Measure A (expires 2008) 1/2¢ Sales Tax	$52 million	• 20% to local agencies, 0.7% to transportation system management, 0.01% to bike projects; remainder to transit and roads as specified in ballot measure; also establishes trust fund for paratransit	SamTrans, Peninsula Corridor Joint Powers Board (Caltrain), county, cities	Voter-approved program administered by SMCTA
Value Pricing (formerly congestion pricing)	TBD			MTC
Contributions of Local Partners	TBD			Local Partners
Cities Tax Increment	TBD			Cities

BART FUNDING CATEGORIES

Category	Approximate Annual Funding (BART)	Eligible Uses	Who can claim the money?	Who decides which projects get the money?
Allocations from BART Operating Budget	$13 million	• BART operations, maintenance and capital improvements	BART	BART
General Obligation Bonds	TBD	• Renovation and improvement of physical infrastructure.	BART	Voter-approved program administered
Interest Earnings on Bond Funds	TBD	• Renovation and improvement of fixed infrastructure.	BART	BART
Potential Parking Charges	TBD		BART	BART
Groundlease from Development on BART Property	TBD		BART	BART

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